Analyzing Employment Technologies for Economically Distressed Individuals

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Abstract
Economically distressed individuals—those living at or below the poverty line—and individuals with limited education were hit hardest by the recent economic recession in the U.S. Past research finds that these populations often lack the social capital, or connections, needed to achieve economic mobility and face specific barriers such as community distrust and links to strong ties. In addition, the tools and technologies afforded to and used by more affluent individuals fail to meet the needs of this population. Leveraging techniques from Human-Computer Interaction (HCI), we investigate employment technologies (e.g., LinkedIn, TaskRabbit, ODesk) designed to foster social capital and to help individuals find jobs. We contribute the results of a competitive analysis that highlights explicit barriers of employment technologies, or technologies that promote job growth (e.g., the need for credit, upfront money). We also contribute results of a brainstorming session that include concepts to improve future employment technologies.

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Introduction
Economically distressed populations face a number of barriers to finding employment. For example, these populations often lack: information related to high-demand jobs and access to resources that provide skills and training for changing demands 0.

Economically distressed populations are often disconnected from job opportunities and lack information about good paying jobs and positions that provide on-the-job training. These populations also lack available resources, informal contacts, and may face issues such as weak transportation infrastructure 00, which is often needed to access jobs. Furthermore, issues such as ex-offender status may lead to disconnection from labor markets 0.

Social Capital and Employment Technologies

Social capital is defined as "connections among individuals--social networks and the norms of reciprocity and trustworthiness that arise from them" 0. Social capital facilitates resource sharing beyond information (e.g., car-pooling), provides emotional support, and fosters interdependent actions such as community participation 0. Building social capital is vital in helping economically distressed populations address many of the barriers to finding employment [4]. Putman identifies two types of social capital: "Bridging" capital that refers to weak ties, or connections among different kinds of people. "Bonding" capital refers to strong ties, or connections that bring together similar kinds of people 0. In addition to "bridging" and "bonding" capital 0, "linking" capital, or access to those in higher authority is useful for job finding and economic growth 0.

Weak ties help a job seeker to get new job leads whereas strong ties are more effective in in getting job offers and acceptances 000. Job seekers with stronger ties spend more time networking, resulting in greater number of job offers 0. Burke and Kraut also suggest that communicating with strong ties provides better emotional support and enhances motivation, which decreases the employment duration after the loss of a job 0. On the other hand, weaker and high-status ties are better sources of otherwise unattainable information 00. Prior research has also found that lack of trust within economically distressed communities hinders effective use of social capital 0. Not only is there a need to build weak ties, there is a need to enhance strong ties within these communities.

Information and Communication Technologies (ICTs) such as LinkedIn, Facebook, TaskRabbit, and ODesk, are particularly useful for finding resources within and outside of a community. For instance, the use of these sites could lead to jobs and training opportunities. Findings from Kuhn and Mikal suggest that employment technologies should focus on unobservable characteristics such as building motivation and social capital to be successful 0. However, most employment technologies and social job search sites like LinkedIn work well because existing users already have strong bridging ties 0. In addition, most users are employed and looking to further their careers 0. Yet, the effectiveness of these sites among economically distressed and other disadvantaged populations is unknown, and the role of ICTs in minimizing or eliminating barriers remains unexplored. Our research aims to fill this gap.

Method

We employed HCI techniques in our study. Our goal was to use ethnographic-like investigations to understand how employment technologies could best address the needs of economically distressed individuals with little social capital. In a qualitative study of economically distressed individuals living in Detroit, MI, researchers sought to understand the

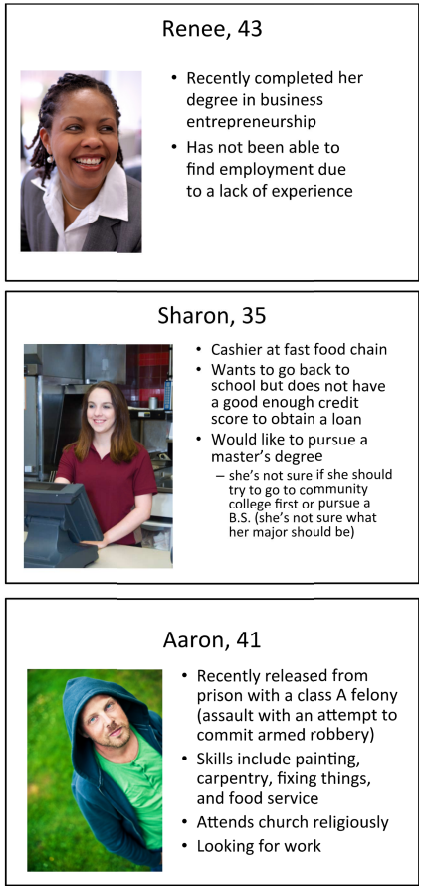

Figure 1 - User profiles

challenges of populations facing economic hardship, the strategies and resources individuals used to be successful, the presence of technology among these populations, and barriers affecting social capital 0. Dillahunt found a pervasive lack of understanding in existing literature around fostering social capital among populations with little to no social capital 0. These communities lacked both weak and strong ties, access to "bridging" capital, or ties to heterogeneous connections, and lacked ties to those in authority.

We extend this research by creating user profiles, or user personas to help focus on end-user goals and to understand their limitations to using existing employment applications. Our contributions include the results of a competitive analysis that show the existing barriers of employment applications (e.g., the need for credit, upfront money, and existing connections). We also contribute the results of a brainstorming session, in which we generated concepts for new employment technologies and for our future work.

User Profiles

Results from 0 showed that more than 50% of participants surveyed used some form of social media, searched for jobs online, and used smart phones and computers. At the same time, more than 50% of participants were unaware of jobs in the area, and many lacked both strong and weak ties. We created user profiles based on this information as well as stories presented in user-generated scenarios as explained in 0. We then conducted a competitive analysis of existing social media to evaluate whether these ICTs could benefit our target population.

Competitive Analysis

We explored and identified three types of employment-related technologies: online marketplaces (e.g., TaskRabbit, ODesk); informational sites (e.g., Craigslist, newspaper help wanted ads); social networking and recommendation-based sites (e.g., LinkedIn, CareerBuilder). We assessed the strengths and weaknesses of specific sites, identified missing categories of applications, and determined the target audience for each site. We also identified several criteria to analyze the features of each site; these include the time needed to create an account, site requirements (e.g., profile, resume, etc.), and aspects of networking and building social capital (i.e., the ability to refer jobs and/or links to others). Finally, we leveraged our user profiles to identify existing limitations of these sites.

Findings

Our approach allowed us to conduct a preliminary evaluation of the effectiveness of employment technologies for our user profiles. We use our findings as a platform for improving existing applications. We also plan to create and discuss design probes with members of our target audience.

User Profiles

Figure 1 provides an overview of three distinct user profiles. We leveraged our findings from past work, including a lack of understanding of what to do upon completing an advanced degree (i.e., how to go about finding or creating jobs); mishaps such as credit abuse by family members that led to poor credit; and obstacles resulting from prior prison records such as a lack of social capital.

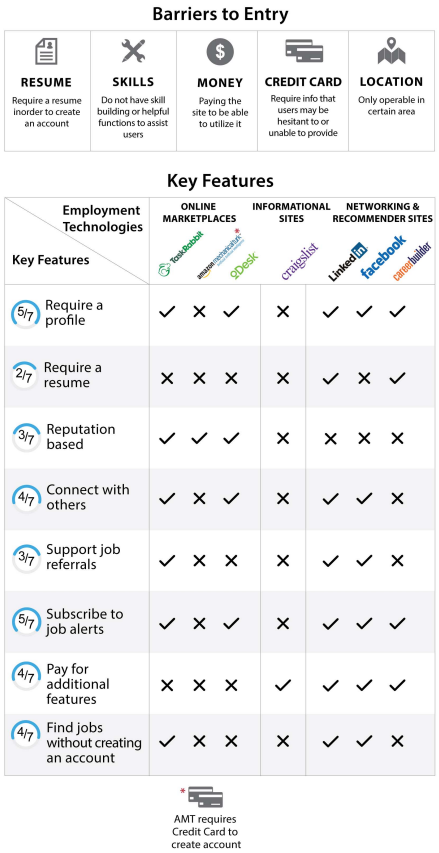

Figure 2- Competitor Analysis

Competitive Analysis

We found from our competitive analysis (see Figure 2) that certain sites have entry barriers, which may hinder economically distressed individuals. For example, individuals may be unable or unwilling to provide personal information or credit-card payments to certain sites. Amazon Mechanical Turk, for example, requires users to provide a credit card number to create an account. Similarly, ODesk currently requires either a bank account or prepaid debit card for customers to receive payment. Other user limitations and restrictions include the need to have an established reputation to find work and/or form new connections. Sites such as TaskRabbit and ODesk suggest that those with existing experience and connections are more likely to find jobs quickly than those with limited experience or connections. Finally, some sites such as TaskRabbit are not available to certain cities such as Detroit.

The ease of entry to sites, effective communication and networking functions, the ability to search existing databases for jobs at various skill levels, and recommender systems are beneficial for all job seekers. However, advanced and economically stable populations, those populations that may already have jobs benefit most. We offer several suggestions to help economically distressed individuals find employment via these sites.

Initial Design Implications

Dillahunt suggests that the key to fostering social capital is building both strong and weak ties and that those already high in social capital may benefit the most from social networking applications 0. We found that those from economically distressed populations may face barriers if and when they use these technologies. Therefore, we brainstormed ways to eliminate entry barriers and broaden existing employment technologies so that they strengthen both bridging and bonding ties among those individuals with low social capital.

Fostering strong ties

Services from the sharing economy (e.g., TaskRabbit) rely on user ratings to determine a person's reputation. Reciprocal reviews also help to build trust among users 0. However, it is unclear how someone with little social capital could work to build his or her reputation online or offline. Encouraging individuals to perform volunteer tasks and broadcasting their results could improve a person's reputation and overall trust within the community. We could further identify the types of volunteer tasks that individuals could or would be willing to do through our design probes (e.g., cutting grass in abandoned areas, neighborhood repair work).

Fostering weak ties

Dillahunt et al. suggest that fostering weak ties should occur by finding commonalities between groups with high social capital and those with low social capital 0. We proposed a design concept that links user profiles from an employment application to similar profiles from other social sites such as Massive Open Online Courses (MOOCs), Facebook, blogs, and community websites. Profile characteristics could connect across location, interests, date or place of birth, or places of education, which extend to high school. We could connect user profiles on one site to user profiles on other sites. For example, imagine Sharon in Figure 1 searches an employment site (Figure 3) for potential career paths. She notices that Renee, a recent graduate with a degree in entrepreneurship, is open to providing advice

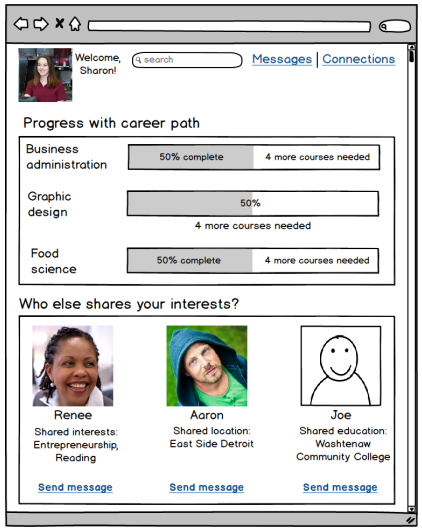

Figure 3 -This mockup demonstrates how an ICT could help individuals work toward their career paths and connect with similar individuals and across socioeconomic boundaries.

based on her blog. Sharon then connects with Renee to ask questions about her experience and her job search. Renee connects Sharon with her friends who took free MOOCs to help them determine the focus of their master's degree.

Next Steps and Conclusion

Thus far, we have leveraged a small number of techniques from HCI to understand some of the baseline requirements needed to build employment applications for our target population. Findings from 0 allowed us to create user profiles that were representative of those participating in the study. We then conducted a competitive analysis to identify limitations of online employment applications such as the need for credit, upfront money, and existing connections—many requirements that were barriers for our user profiles.

Participatory design 0 will be essential to our work going forward as our goals are to understand aspects and features of applications that are beneficial to our target audience and to identify which aspects need improvement. Based on our initial understanding of what is effective and ineffective, we will begin to: create design sketches and mockups, conduct design sessions, and obtain feedback from our target population. In addition to receiving initial feedback on our designs, we used Amazon Mechanical Turk to help us test the survey that will accompany the design probe exercise. Our primary goal is to understand how individuals leverage their current connections (e.g., strong or weak ties) to search for employment. Out of 19 Mechanical Turkers similar to our target population in terms of education and income, we found that nearly 50% have never sought job search assistance from strong ties such as their neighbor or pastor. Most seek assistance from their family friends and some type of coach. Going forward, we will understand why these "bridging" and "bonding" ties are less likely to be used..

In the face of common limitations such as lack of access to transportation and limited job history, we seek to understand what types of employment opportunities could exist by building strong ties and extending weak ties. In addition to job opportunities, we will explore what training individuals have access to through strong and weak ties.

To initiate this effort, we collected a sample of more than 80 jobs and tasks from Craigslist, ODesk, CareerBuilder, TaskRabbit, and Amazon Mechanical Turk. We ensured that these tasks were tasks that could be bartered if individuals could not cover upfront costs or payment. We created more than 10 job categories (e.g., automotive, salon/spa/fitness, food service, child and senior care, housekeeping). We used these categories in an attempt to better understand the specific employment opportunities that individuals feel confident enough to apply for. We will also attempt to understand when and whether individuals would be willing to employ or work for strong and/or weak ties. Finally, we wish to categorize those jobs that provide opportunities to build trust and reciprocity, which may boost social capital.

After completing this exercise, we will analyze the results and use them to proceed with our next steps. These include:

- iterating over design sketches and design probes;
- conducting design probes during interviews and focus groups to understand what features are beneficial or not;
- refining designs based on iterative feedback from design probes.

We plan to contribute the results of design probes using employment technologies customized and tailored to fit the needs of individuals in economically distressed communities. Our ultimate goal is to design software that helps these individuals build the social capital needed for economic growth and sustainability.

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