Mobile Social Software for the Developing World

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Abstract. This paper discusses how the importance of social networks for performing everyday tasks in the developing world leads to new considerations of the utility of social networking software (SNS). The paper presents some results from a multi-year, multi-method study in Central Asia that tracks patterns of technology adoption and adaptation, as well as shifts in media consumption and information seeking. Our results suggest SNS is a particularly compelling approach in resource-constrained environments (broadly defined) as a way to leverage and systematize the ad hoc processes people develop to navigate their everyday lives and information ecology.

Keywords: Mobile phones, Internet use, technology adoption, Central Asia, social networks, social networking software, information seeking

1 Introduction

This paper explores the importance of traditional social networks and trust in sources of information in order to inform the design of mobile social software applications in digitally emergent societies. This work is part of a multi-year study of information and communication technologies (ICTs) and their usage in Central Asia, specifically the countries of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. This project, the Central Asia + Information and Communications Technologies Project (CAICT), began with exploratory work in Uzbekistan in 2000, and has since expanded to the general region. The CAICT project uses a multi-method approach that incorporates broad social surveys, interviews, ethnographic observation, policy monitoring, web archiving, monitoring and analysis of chat sites, focus groups, and design ethnography. The fine-grained understanding of ICT usage patterns that emerges from this work provides background information that can inform innovative design approaches to new hardware, software, and services for the developing world. In particular, the results presented in this paper focus on pre-existing patterns of ICT usage and relate those findings to how social networks function in offline contexts—in particular, to how people get information and what information sources they trust. The real-world dependency on social networks that has emerged as a theme throughout this research points to the value of developing applications that leverage social relationships in a variety of ways. To further explore this emerging trend, we conducted a design ethnography in Kyrgyzstan in July 2006. The design ethnography

activities were specifically aimed at exploring both the functional importance of social networks in people's lives across multiple domains as well as gaining a more nuanced understanding of the ICT ecology within which they live.

2 Methodology

Most of the findings reported here are based on a broad social survey that was conducted throughout Central Asia in January–March 2006 and based on pilot survey work in Uzbekistan in 2002–2003 and in Kyrgyzstan in 2003–2004. The CAICT project designed the survey instrument and contracted the survey firm BRIF Research Group, located in Almaty, Kazakhstan, to administer the survey. The survey was administered to 4,000 respondents, aged 15 and older: 1,000 subjects in each of four countries: Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The survey sample was based on census information on age, gender, ethnicity, and geographic location released by the government of each country. The sample includes 50 sampling locations, and 12–29 respondents were interviewed in urban and rural areas from several regions of each country.

In addition to exploring patterns of ICT adoption and adaptation in Central Asia, the survey also focuses on the information ecology of individuals, their patterns of different media usage, and issues of trust in sources. The survey was administered in Russian and other regional/national languages to residents throughout each country. In addition to the general sampling scheme, a three-stage process was used to select respondents:
- Probability Proportional to Size sample of Primary Sampling Units (PSU);
- Consecutive random sampling of households in determined PSU;
- Selection of a respondent using Kish Grid method.

Because Internet use rates in the region tend to be quite low, most of the questions are geared for the general population and address information seeking behavior and communication patterns across traditional media. The survey also contains questions about attitudes towards the Internet, which were administered to all respondents. A separate section on Internet usage patterns was administered only to respondents who indicated they use the Internet.

This research is also supported by ethnographic observation conducted by members of the U.S. research team and local researchers and focused primarily on public use of ICTs. Observational data includes field notes and photographs and is used to provide explanatory background with respect to everyday life in the region and technology use.

As mentioned above, much of the survey focuses on social networks and information channels, and results from multiple data collection activities of the project indicate that better understanding the web of connections within which people live can productively inform approaches to technology design. Our work throughout this project demonstrates that looking at resource-constrained environments reveals certain patterns related to dependency on social networks. This finding is relevant for a variety of resource-constrained environments, and Central Asia is an excellent site for such an investigation because of the interplay of resource issues; the region can be

characterized as both an emerging economic market and an information-poor environment. Our findings here open up the question of whether resource-constrained environments are in fact sites where people are more dependent on social networks; this question is outside the scope of this paper, but it is especially interesting in light of how resource constraint becomes an issue in the developed world as we move from the desktop computer to small screen and mobile computing devices.

3 Theoretical Framework

3.1 Social networks and post-Soviet society

Environments vary in their information ecology. Central Asian societies are traditionally characterized by heavy reliance on social networks to acquire information, personal favors, jobs, and consumer goods. In these traditional social networks, the people one knows are important avenues to information, assistance, and goods [1], [2], [3]. Social networks typically consist of extended family, neighbors, and close personal relationships, such as classmates, and are less commonly associated with impersonal ties. Despite the many modernization processes of the Soviet system, the reliance on close and personal social ties actually increased during the Soviet era as society became atomized and distrustful due to the terroristic policies of the communist party and Soviet secret police [4]. Neighborhood committees, traditional community institutions of self-help and dispute arbitration in several of the post-Soviet Central Asian countries, were co-opted by the state during the Soviet era [5], and this co-optation continues today or has discredited and caused the disintegration of the traditional neighborhood networks. As a result of these Soviet legacies, very personalized patterns of social networking became vital for access to information and opportunities in the Soviet era. These types of social networks remain significant today.

   These traditional social networks distribute information about local and international news, goods, and services, and they provide important alternatives to tightly regulated state information services. Throughout the Central Asian region, the local governments control the information available in local news media and only report positive or non-controversial stories.[1] Moreover, decaying Soviet telecommunications infrastructure limits the access households have to information. For example, even in urban areas some households still do not have phone lines**,** and the situation is much worse in rural areas where entire villages may not have landline telephone access. According to data from the International Telecommunication Union, for example, fixed line penetration through the Commonwealth of Independent States is only 37 percent of that in Western Europe [7]. In urban areas, the Internet is present, but expensive and inconvenient, as most use occurs at public

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[1] In fact, Reporters without Borders has rated Central Asian governments among the world's lowest in press and Internet freedoms, even labeling several of the local governments "enemies of the Internet" [6].

access sites such as Internet cafes. Indeed, 48.7 percent of survey respondents who use the Internet indicated that they *usually* do so from Internet cafes. Thus, local residents rely heavily on family and friends for "real" news, a practice that leads to confusion, muddied transmission of information, and rumor, even about critically important local events such as Kyrgyzstan's Tulip Revolution in March 2005 and the Andijon uprising in Uzbekistan in May 2005. However, mobile phone technologies are rapidly spreading throughout the urban and rural areas of Central Asia [8], and, given the pattern of technology adoption that is emerging, it seems possible that social networking applications for mobile phones could critically contribute to improving access to information and networks for local residents. Fig. 1 compares technology usage across the four countries surveyed, and it demonstrates that mobile phone usage significantly outstrips that of Internet.
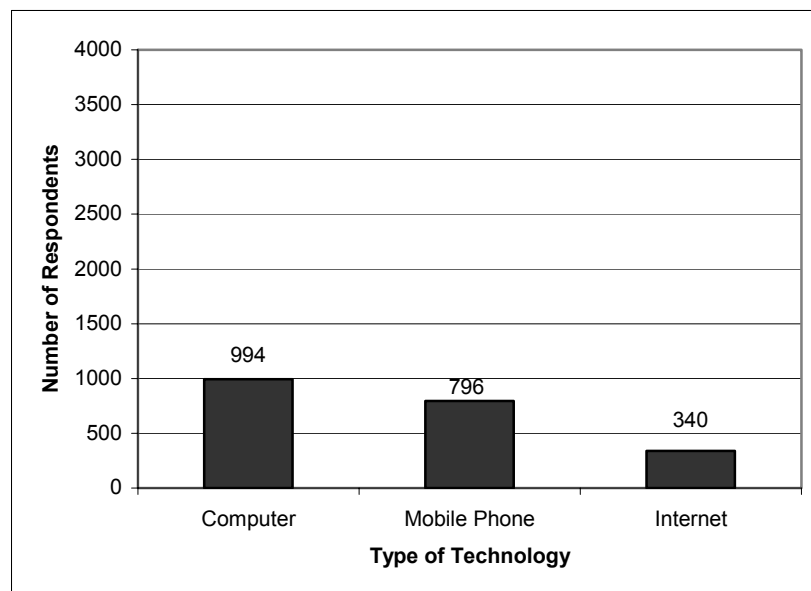

Fig. 1. Number of respondents who indicated using computers, mobile phones, and Internet in Central Asia; N=4,000.

   Within this context of social structure and technology use, since the collapse of the Soviet Union, western aid programs have devoted concerted efforts to construct the more diffuse types of social networks through the promotion of civil society institutions, such as non-governmental organizations, associations, and clubs.[2] While initially seen as crucial to the post-communist political and economic transitions, these new organizations are also seen as important counterpoints to clan ties and radical Islamic mobilization, which threaten stability in the Central Asian region. In practice, these new organizations are often more responsive to international agendas

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[2] These efforts are theoretically motivated by an understanding of a robust civil society as an essential underpinning of successful democratic and economic systems [9], [10].

and donors than to the needs of the local communities [11], [12], [13]. They do not, therefore, supplant the social networks with which individuals navigate their communities. Nevertheless, they have begun to establish important elements of a professionalized "third sector" that might eventually serve as liaisons between state agencies and societal interests. In addition, these organizations are also seen to develop and deepen the impersonal social networks that social networking software applications might enhance. In some ways these new organizations are an offline version of what social networking software can be: an externalized resource that aggregates resources for individuals.

3.2 Social network software

The critical importance of social networks in post-Soviet Central Asian society reveals an opportunity to imagine the ways in which these existing social networks can be supported by technology. Social network software or services (SNS), broadly conceptualized, refer to the ways in which information and communication technologies are used to leverage, articulate, and extend social networks. The emergence and subsequent growth of SNS has garnered much attention from the media and from researchers, but, more importantly, the rise in use and adoption of SNS by vast numbers of people worldwide highlights its significance and potential.

Currently the most popular types of SNS are web-based and focus primarily on socializing activities. As web-based systems, they are designed and optimized for desktop use. By their current implementation, we can extrapolate that the intended audiences of these sites are individuals with large groups of friends and a significant amount of time to devote to socializing with peers. Based on patterns of use that imply long amounts of time spent on these sites, we can also state that users either own or have access to computers with continuous Internet connections. Some examples of SNS web sites that facilitate socializing—that is, creating and maintaining friendships and seeking dating partners—include Orkut, MySpace, and Friendster [14], which provide ways for individuals to create and share profiles and link between profiles. In doing so, these users explicate existing and expanding social networks that exist both on and offline. Other SNS focus membership around existing established offline communities. For example, in its first iteration, the site Facebook tied membership specifically to established offline communities in the form of educational institutions, like a college or university. Access to the social network was contingent on and restricted to members of an offline community. Research conducted on Facebook found that members used the community network for social searching—looking for a particular person who was already known to them in the offline community, rather than social browsing—looking to meet strangers in the network [15].

A small but growing number of sites are utilizing SNS applications for purposes beyond socializing and friendship building. For example, sites that provide job postings, recruiting, and networking opportunities like Jobster and LinkedIn allow individuals to connect via social networks for the purpose of career advancement. In the United States, the site Prosper.com facilitates lending and borrowing outside of conventional banking systems. Other sites provide alternative social formations, such

as meetup.com or provide recommendations of events, like upcoming.org. What has not been fully investigated is how these uses of SNS that push beyond mere socializing can impact or transform traditional structures or practices in people's everyday lives.

The web-based SNS examples above highlight the ways in which ICTs can mediate and enhance social networks. Considering the mobile phone as such a technology is relevant since its basic functionality as a device is one that emphasizes social connections. Mobile devices are social devices, according to Bleeker, "in the degree to which they mediate social relationships, social networks and manage the circulation of culture that sustains such networks." [16] SNS for Mobile, or Mobile Social Software (MoSoSo), examples include applications that allow users to share their location and find others in their immediate or extended social network and broadcast messages, such as Dodgeball, Twitter, or Slam. While these examples are contingent on users checking in or letting the system know their location, other examples of MoSoSo leverage more robust, yet potentially intrusive, situationally-aware technologies such as GPS, phone towers, and Bluetooth which allow individuals to be notified if they are within geographic proximity to others in their network. Some examples include Reno [17], which provides mobile enabled information for parties attempting to rendezvous, and Jabberwocky [18], which ascertains a sense of "familiar strangers" by scanning for nearby mobile phones and Bluetooth-enabled devices to illuminate someone who may be recognizable but who an individual has not spoken to. Finally, the product Serendipity [19] provides a combination of user-created profiles, as we have seen on friendship enhancing websites with situational awareness technologies, to provide matches of individuals who share commonality based on defined attributes and a geographic similarity by being in the same room or building.

As demonstrated above, the genre of SNS provides a variety of opportunities for technology to support social interactions. These interactions are limited to contexts replete with information technology infrastructure and resources. By understanding particular characteristics of lifestyle and usage patterns, and investigating new locations and situations, we can imagine new ways that technology, and in particular, mobile technology, can facilitate meaningful social interactions. Central Asia, with its emerging digital infrastructure and low levels of impersonal social networks, is a prime location for testing new approaches to SNS applications.

4 Study Findings

This section reports findings from the project's 2006 survey. We discuss evidence of the local importance and trustworthiness of social networks and other information sources and the implications for SNS applications.

4.1 Use and trustworthiness of information sources in Central Asia

As discussed above, personal social networks are important sources of information for individuals in Central Asia. A substantial component of our survey was designed to

compare the importance of these networks with other types of information sources. In a 2003 pilot test of the survey in Uzbekistan, respondents were asked to rate the importance of information sources such as family, friends and neighbors, television, radio, newspapers, and the Internet on a five point scale (with 1=extremely unimportant and 5=extremely important). Compiling 2003 pilot data and 2006 survey results on Uzbekistan, Wei et al. [20] find that, for Uzbeks, friends and family are second only to television as critical information sources, and that rural residents rely heavily on state television as their only regular information resource from non-local, non-personal sources. Given the bias of government sanctioned media, finding alternative sources of news and information through social mobile software could have important implications for the Central Asian populations.

The 2006 survey conducted throughout four countries of Central Asia asked respondents to state their opinions on the trustworthiness of a variety of personal and media information sources (very trustworthy, trustworthy, untrustworthy, very untrustworthy). Respondents were also asked to report whether they had consulted these information sources within the past week in a variety of domain areas, including health, information about elected officials and official services, commercial purchases, religious news, and local news items. As Fig. 2 and Table 1 below indicate, personal social networks are important information sources throughout the region.

While, generally, all sources of information are seen as trustworthy, personal networks are viewed as most trustworthy. Indeed, nearly 100 percent of respondents rate family as very trustworthy or trustworthy, nearly 90 percent rate friends as very trustworthy or trustworthy, and nearly 80 percent rate neighbors as very trustworthy or trustworthy. By contrast, television, newspapers, radio, and the Internet were seen as less trustworthy sources of information.

In another block of questions, respondents were asked how frequently they used various sources to find information about a variety of topics. These questions provide domain-specific insight into information-seeking patterns (See Table 1). Television was the most commonly consulted source of information, but, as Fig. 2 indicates, information from personal social networks is seen as more reliable and honest.
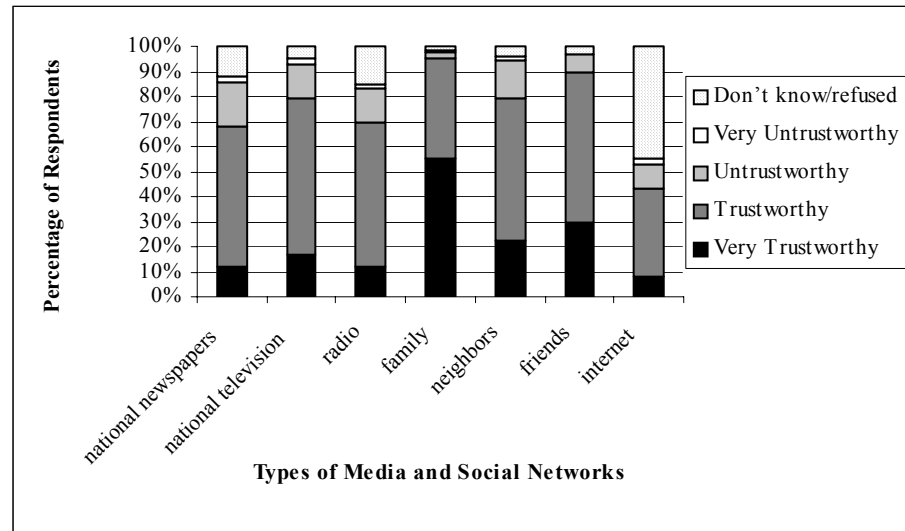
Fig. 2. Trustworthiness of media and social networks as information sources; N=4,000.

Table 1. Percentage of respondents who indicated using various sources to find information in six domain areas in the preceding week; N=4,000.

Information Source	Local news	Something to buy	Health issue	Elected official	Official service	Religious news
Television	67.6	26.2	40.0	35.1	28.0	36.1
Family	35.8	31.2	34.7	12.4	22.8	21.6
Friends or Neighbors	38.9	26.0	23.4	13.7	20.9	24.9
Newspaper	32.8	14.7	18.3	15.4	12.8	10.0
Radio	26.1	9.0	13.8	12.4	9.7	11.5

5 Discussion

The findings reported above suggest that in digitally emergent Central Asia, social networks are still critically important, but television and other new sources of information and communication technologies can play important supplemental roles. Designing new electronic information sources and social networking applications is more involved than enabling old behaviors with new media. It is necessary to think about a system that leverages experience with social networks and that also takes into account a collective awareness of which information to trust and which viewed more skeptically. Additionally, the survey data indicates that one's "social network" is not a clearly defined entity, even when it is a resource upon which one relies significantly. In other words, the utility of the social network does not correlate with its uniformity. The data in Table 1 demonstrate that "family" and "friends or neighbors" are relied

upon in quite different patterns depending on the domain of information under consideration. There are overlapping and concentric circles that define how individuals utilize their social network, and this is the kind of complexity that makes the social network a challenging resource to replicate via SNS. In seeking to better understand these nuances, our design ethnography probed for a detailed picture of what parts of the social network people leveraged for different life tasks. Discussion of those results is beyond the scope of this paper, but they are critical to informing the SNS design guidelines that will result from our project.

As we consider the potential of SNS, it is important to understand the meaning of technology adoption patterns in terms of actual usage. As Fig. 1 demonstrated, mobile use is higher than Internet use in the region. Consequently, it seems important to consider how social networks and mobile phones might productively interact rather than focusing attention on desktop applications. However, it is also important to note here that mobile applications in the developing world are not synonymous with the mobile web. Indeed, there are tremendously innovative applications that use SMS, and it is crucial to recognize the extremely low usage rates of the mobile web in the developing world. In seems much more productive to consider developing mobile applications that dovetail with the existing mobile usage patterns in such regions.

6 Conclusion

This paper has sought to explain some of the underlying societal issues that contribute to a population with strong reliance on personal social networks and to illustrate how such patterns of information seeking can be leveraged by social software. Our goal has been to demonstrate that in resource constrained situations such as those found in the developing world (although not exclusively there), people develop extensive and agile networks of varying levels that allow them to navigate their world successfully.

Coupled with the rapid uptake of mobile phone technology in the developing world and the growing popularity of Internet-based SNS, it seems apparent that social networking applications developed for mobile phones would leverage both existing technology usage patterns and information seeking patterns in the developing world. It is also clear that there are many exigencies beyond socializing that can drive users to MoSoSo. Social networks are already a multiplier for accomplishing tasks; building software to further leverage that relationship could potentially provide significant resources to the populations in question. The key is to situate such applications firmly within an understanding of what drives a reliance on social networks and of how people currently use the technology to which they have access.

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