Multi-stakeholder assessment of a Mobile and Temporarily Interconnected Systems prototype: People-First Tourism

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ABSTRACT

While tourism has often been proposed as a mechanism for equitable and sustainable development in developing countries, most destination communities remain relegated to the role of passive "tourees" who are unable to participate in economic opportunities often controlled by tourism retail monopolies. Guided by information systems (IS) research on mobile and temporarily interconnected systems (MTIS), this work examines the ubiquitous nature of information services for users on the move. That is, users that are largely dependent on mobile telephones and temporary tourism services. Stakeholder interviews included local South African micro-entrepreneurs from under-resourced rural and peri-urban communities and other national and regional stakeholders. The findings informed the development and early implementation of a web marketplace for tourism micro-entrepreneurs (i.e., www.peoplefirsttourism.com) that bridges hyper-connected consumers with under-resourced micro-entrepreneurs who use simple mobile phones. Further, this study builds on interdisciplinary research to enrich discussions about ICT for Development (ICT4D).

Keywords:
Information and Communication Technologies (ICT), Information and Communication Technologies for Development (ICT4D), Tourism, Mobile and Temporarily Interconnected Systems (MTIS)

INTRODUCTION

Tourism has not been a traditionally studied industry in the information systems (IS) literature. Authors, however, have argued that information and communication technologies (ICT) offer the ability to facilitate the provision of authentic and locally-beneficial tourist experiences (Morais, et al., 2012). The potential for reaching untapped markets can afford opportunities for individuals in resource-scarce rural regions to spawn economic development and entrepreneurship. According to AfricanEconomicOutlook.org, "prospects for Africa's tourism are generally good provided security is ensured and that Africa´s unique wildlife and ecosystems are protected." The South African National Tourism Sector Strategy Report (February 2011) further indicates that tourism is a priority economic sector in the country and accounts for R 67 billion or 3 percent of the gross national product. Small and medium enterprises (SMEs) are cross-cutting in various tourism initiatives, such as People Development and Research, Information, and Knowledge Management. To this end, the strategy report states:

Existing research often fails to address the needs of industry stakeholders. A lack of collaboration also results in a duplication of efforts and resources (p 26).

South Africa as a whole, and particularly the tourism industry, need to transform. Transformation is a critical success factor, without which the growth and development of the industry are not guaranteed. However, the rate of transformation in the tourism industry has been very slow, with few black entrants in the market, and big and small business still largely dominated by white people. Significant effort is required not only to transform existing businesses in the tourism industry, but also to grow the industry as a whole to allow for more mainstream black-owned businesses of all sizes to be established (p 56).

The rationale for focusing on South Africa and tourism goes even further. Despite global recessions and downturns, tourism continues to fuel economies and it represents a significant portion of gross domestic product (GDP) of many countries. South Africa's GDP grew by a robust 3.2% in 2012. This was faster than the growth of the world economy as whole (2.3%), and also faster than the growth of a number of broad industries including manufacturing, financial and business services, and retail. South Africa, the largest destination in Sub-Saharan Africa, grew by 10% in 2012 to over 9 million tourist arrivals (World Travel and Tourism Council Report, 2013; UN World Tourism Organization – Tourism Highlights, 2013).

A 2008 report of mobile phone use in Africa reported that, while SMS is a growing market on the African continent, only larger, more developed markets, such as those in South Africa, Egypt, Nigeria, and Morocco are likely to see significant gain in SMS use (Africa & Middle East Telecom Week, 2008). This should be taken into consideration when considering African states with less mobile penetration than these major players. In addition, the real impact and significant disparity of mobile use among Sub-Saharan and Northern African countries cannot be omitted from the discourse. Issues of economic development, infrastructure, educational attainment, and health play vital roles in distinguishing these regions (Mbarika, 2002; Kvasny, et al., 2008; Donner, 2008).

Given that mobile phones are the central mode of personalized tourism services for South Africans, our research is not defined by central physical information technology supporting our stakeholder population. Hence, user artifact requirements do not prescribe to traditional systems development and design assumptions (Henfridsson and Lindgren, 2010). These results show the challenges associated with multi-contextuality, such as designing universal services where user context is unbounded and permits switching unlike traditional user involvement design efforts (Lindgren, Andersson and Henfridsson, 2008).

We sought the input of local tourism stakeholders to understand their perspectives regarding an IT artifact designed to support local needs. Mobile and temporarily interconnected systems (MTIS) are "typically embedded in the physical infrastructure" (Henfridsson and Lindgren, 2010 p 120). While Henfridsson and Lindgren (2010) confirm that infrastructure can include buildings, containers, goods, and even cars, our study focuses on under-resourced local mobile phone users, private stakeholders in the telecommunications sector, and stakeholders in the South African Ministry of Tourism and regional tourism offices. Based on the above literature, our study seeks to answer the following research question:

"What are the technology needs for a tourism artifact designed to support South African micro-entrepreneurs who use mobile and temporarily interconnected systems?"

This paper is structured as follows: We will provide a literature review and description of the research method that guided this research. After presenting the study findings we will discuss research implications and conclusions.

LITERATURE REVIEW

ICT4D and Tourism

"According to the Worldwatch Institute, tourism in developing countries has been increasing at a rate of 9.5 percent annually, more than double the worldwide average" (BGS International Exchange, Fall 2013, p 19). Tourism, community development, and environmental conservation scholars have been interested in examining ways to use natural resources as a force to enable marginalized communities to secure improved social and economic capital via entrepreneurship (Usher and Morais, 2010). Novel approaches to tourism development have been proposed, including community-based ecotourism (Garrod, et al, 2001; Garrod, 2003), natural resource management (Dressler, et al. 2010), and pro-poor tourism (Ashley et al, 2001). Morais et al. (2012), however, posit that upon extensive empirical scrutiny, there is prevailing evidence that many of these approaches have brought limited benefits to local host communities. Conservation goals have at times been accomplished, and tourism retailers and hospitality companies have hoarded economic benefits, leaving only marginal benefits to the passive toured communities. This problem is largely attributed to the difficulty of host communities to communicate directly with markets, because infomediaries (e.g., travel agencies, tour operators, travel media) control tourism demand, diverting tourists to destinations where they can make the most profit. Accordingly, innovative ICTs have the potential to serve as mechanisms to enable community-centric tourism and economic development approaches by creating direct modes of communication and exchange between supply and demand.

ICT4D scholarship examines digital technologies intended to enhance, improve, and facilitate development in often resource-scarce global markets. Government policymakers, consultants, academicians, technology professionals, and activists (Ferguson, et al., 2013) are often stakeholders who can offer their views to inform ICT4D initiatives. Ferguson, et al. (2013) discuss the impacts of ICT4D in e-government, open source, and mobile technologies, and these scholars offer a salient point. That is, greater participation is critical to the development of ICT4D and the grand challenges associated with health, finance, economic development, sustainability, and entrepreneurship (Heeks, 2008). Moreover, Heeks (2008) offers a four-prong framework to capture the revolution of ICT4D: Readiness, Availability, Uptake, and Impact as shown in Figure 1.
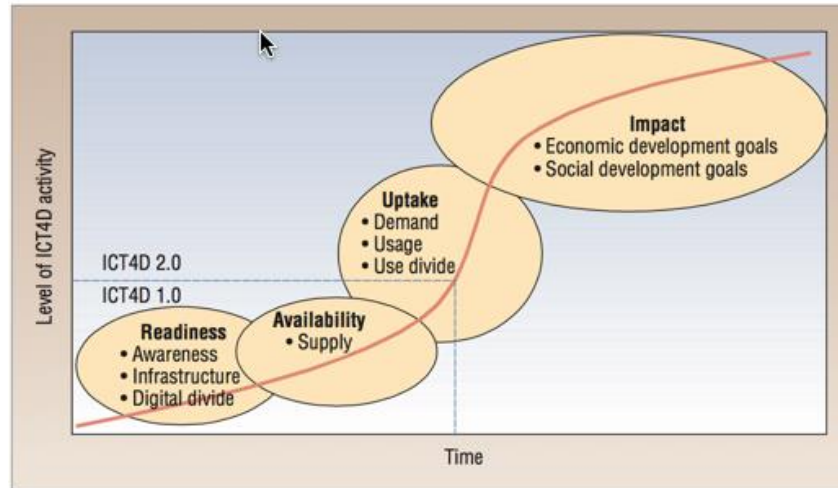
Figure 1: Changing ICT4D Issues Over Time: Adopted from Heeks (2008)

Given the shift from ICT4D 1.0 to ICT4D 2.0, design and development initiatives will be transformed and will democratize stakeholder participation (Mengistu et al., 2010). With this democratization, we do recognize that MTIS create nontraditional dynamics of participation, and thereby influence user needs of artifact design. While accounting for larger, often easily identifiable stakeholders, such as government policy-makers, academicians, and technology vendors, local citizens must not be void from the discourse. Thus, this research study includes not only the insights of the government and private sector but also the perspectives of tourism micro-entrepreneurs in under-resourced rural and peri-urban South African communities.

People-First Tourism Prototype

Supported by cloud and social media technology infrastructure, the People-First Tourism system (Figure 2) was developed as a mobile phone-enabled social network system that connects networks of micro-entrepreneurs with potential markets. The system was initially inspired by earlier ICT4D research about ICT solutions needed by small-scale Kenyan farmers and agricultural retailers. The People-First Tourism system was designed to create a virtual marketplace of tourism services akin to a traditional village marketplace. The system allows local enterpreneurs to compete and collaborate by selling their tourism services to independent tourists, or possibly to tourism providers interested in supplementing their offerings. Hence, People-First Tourism is an example of MTIS since navigation varies by desired user services. Similar to Henfridsson and Lindgren (2010, p.121), "minimal assumptions can be made about physical computing devices to provide a maximum level of personalization" (Lyytinen and Yoo, 2002b, p 380). Given the ubiquity of the MTIS in this study, users' perspectives are even more critical where assumptions about design and requirements can be ambiguous.

In the prototype version of the People-First Tourism system, independent tourists intending to visit a rural region could register on the web portal for a small fee and download an application to their smart-phones. Tourists would register a mobile phone number to be used during their trip – they can use their own global-ready cellular phone, rent a travel phone (e.g., National Geographic Travel phones) or purchase a cell phone at their international destination. The web portal would form a gateway to the

People-First Tourism Marketplace, and the tourist's cell phone would become a customer-member in this virtual network. Networks of tourism entrepreneurs in the region would register as sellers via the system, and their registrations would be generally facilitated by non-governmental organizations (NGOs) working in that area, or by vetted change agents. Entrepreneurs would have geographically anchored seller's profiles describing their services, and would view visitor comments and ratings.

The People-First Tourism system would allow tourists to use web-enabled devices to browse the marketplace geographically to plan their trips, and to use their GPS-enabled smart phones to identify services available near them while in route. Tourists could send web-based messages that would then be translated to SMS to be received by the simplest cell phones – making the participation in this system affordable and accessible to virtually any micro-entrepreneur globally. Once in the destination region, tourists could sign up to receive short advertisements about available services based on their preferences (personalization) and, if using a GPS-enabled smart phone, based on their precise locations. The system would operate in a cloud, processing and storing tourists' preferences, locations, mobile access devices, previous ratings of tourism services, and mediating communication.
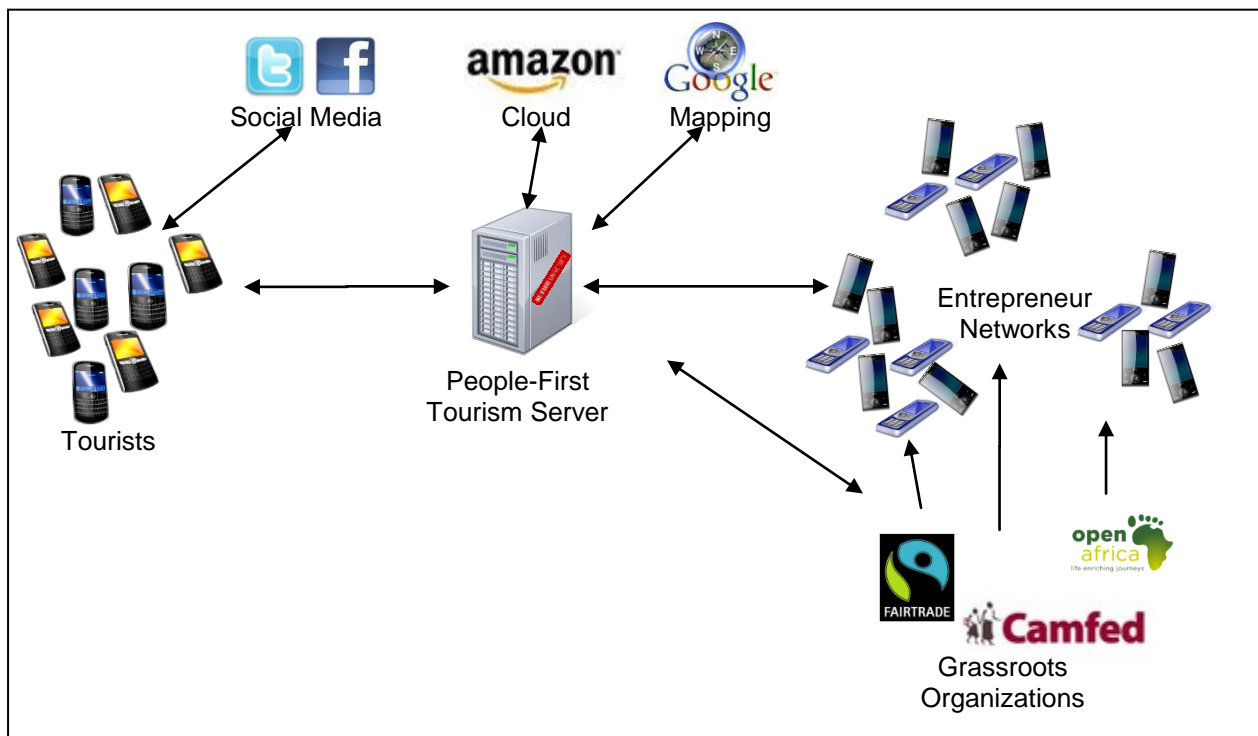

Figure 2: People-First Tourism System

METHOD

The technical component of the People-First Tourism system evolved from WishVast, a mobile-phone-enabled social network system originally developed by scholars with an interest in social entrepreneurship and tourism (Garguilo, et al. 2010; Mehata and Semali, 2009). Between May 2010 and May 2012, the research team deliberated asynchronously and synchronously online about the scope of the People-First Tourism concept and its theoretical foundations. Earlier engagement in the region

informed the development of former prototypes of the IT artifact. From August 2011 to May 2012 in South Africa, the investigators conducted field studies and community assessments by meeting with community leaders and high-level stakeholders. During this period, the investigators also developed interview protocols to be used in the field and obtained institutional approvals for collecting data from human subjects. The interview protocols included a section inquiring about mobile phone use, livelihood strategies, and entrepreneurial activity and interests, as well as perceptions of tourism business opportunities within their communities.

In order to ensure the flow of insight from the various members of the research team, the team members met biweekly to discuss classes of problems, theoretical underpinnings, data analyses, and IT artifact design. The third author served in the liaison role to the local community stakeholders. The team used video-conferencing technologies for these meetings while those located in the same region met more regularly face-to-face. The authors deliberated extensively on the most appropriate study sites and on the format of a group workshop for high-level stakeholders from national and regional tourism government agencies as well as from multinational telecommunications organizations. A diverse group of faculty and students from two American institutions and one South African institution were involved in this project. For two additional weeks with graduate and undergraduate US students, the second author collected data via unstructured fieldwork in rural South Africa. This involved conducting informal interviews with rural residents, protected tourism area managers, and lodging operators. The second author also collected field notes and photos, and these activities provided additional validation to the more systematic data collected during the structured fieldwork.

The interview protocols are provided in Appendices A and B, and served as guidelines structuring the stakeholder meetings. The protocols were designed to solicit open-ended community, corporate, and individual input on the initial IT artifact, the People-First Tourism system prototype, and determine any limitations identified by local tourism micro-entrepreneurs. The research team consisted of the authors, IT developers, two undergraduate students, one graduate student, and an Afrikaans moderator (for language translation).

The stakeholder interview was led by the third author and included 15 practitioners from the South African Tourism Ministry and from provincial government offices, tourism and regional planning academics, and partners from multinational telecommunications corporations. The input provided by these participants was summarized and typed directly into a computer and visualized on a large screen. The meeting was conducted in English, with occasional comments in Afrikaans language. In these occasions, the moderator created English translations and solicited the group's confirmation of any rendition.

To assess the perspectives of aspiring tourism micro-entrepreneurs, we interviewed 54 individuals (28 females and 24 males) with a median age of 27 (age ranged between 18 and 74). These interviews lasted between 45 and 60 minutes. We used a convenient sampling method to recruit these informants from three communities neighboring the Pretoria metropolitan area – i.e., two peri-urban townships north of Pretoria and a rural village adjacent to Pilanesburg National Park (See Figure 3). Investigators in the project had long ties with these communities, which facilitated the recruitment of informants, and these communities were situated near mainstream tourism destinations but had only modest involvement in the industry. These interviews were conducted in pairs, and the field team met regularly after every few interviews to assure consistency in meeting and probing styles. Most interviews were conducted in English, but some of the field team members spoke several regional languages and on two occasions

those colleagues were assigned to older female informants who did not speak English. In all cases, data were hand-written directly into hard copy interview protocols and then transcribed to MS-Word files for later analyses.


Figure 3: Study Locations

The authors, one graduate student, and three independent coders conducted the data analysis. We included themed inquiries as prescribed by Miles and Huberman (1994) and implemented in the Mbarika, et al. (2007) study. The themes herein included delineation of user needs for an IT tourism-focused artifact relative to People-First Tourism.   We prescribed to Braun and Clarke (2006) to ensure that our themes were coherent, consistent, and distinctive by following: 1) Becoming familiar with the data; 2) Generating initial codes; 3) Searching for themes; 4) Reviewing themes; 5) Defining and naming themes; and 6) Producing a detailed report. In support of the in-depth examination of qualitative data, we also conducted descriptive statistical analysis to illustrate some of the frequency data collected in the interviews.

## FINDINGS: BASED ON THEMATIC ANALYSES OF COMMUNITY VOICES

Our thematic analysis resulted in four critical themes to address the research question and consisted of: mobile phone utility, entrepreneurial economic development, economic development by technology stakeholders, and ease of use.
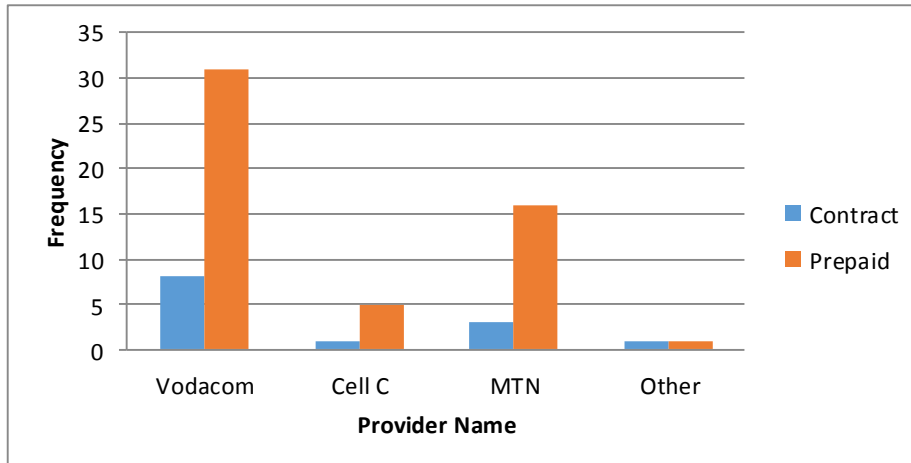
Figure 4: Providers by Phone plan Type

Mobile Phone Utility

The use of mobile phones in Africa has grown substantially in the past several years due to the production of inexpensive handsets and prepaid offerings. One of the primary areas of interest for this study was how South Africans in under-resourced communities use mobile phones to support their social aims and livelihoods, in part to test the feasibility of introducing the People-First Tourism in the region. Interviews revealed that all informants owned *at least* one cell phone, with some owning two or more phones. The predominant telecommunications providers were Vodacom and MTN (Figure 4), and respondents overwhelmingly stated a preference of purchasing pre-paid mobile phone plans rather than entering into a contract with the service provider.
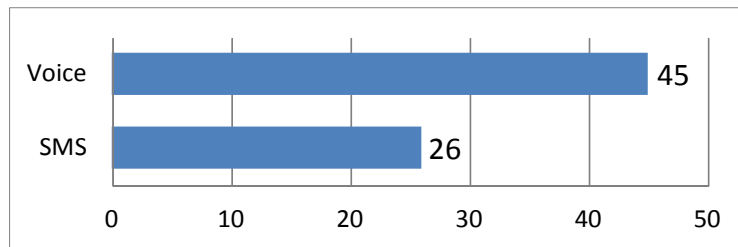

Figure 5: SMS vs. Voice Use

We found that all but two respondents used mobile phones for social use in some capacity (calls to friends and family, SMS, Facebook, etc.). Seventy-one percent (71%) indicated that they used their phones for business. The intent of this question was to determine to what degree mobile phones were being used for the purpose of running their small or micro-businesses. Our question wording, however, prompted individuals to also respond yes if they used their personal phones for uses other than business, such as employment seeking or education inquires for themselves and/or their children.

Voice versus SMS use was also of key interest, given that the People-First Tourism system supports mobile Internet by travelers and SMS by micro-entrepreneurs. Figure 5 illustrates the number of respondents who indicated use of SMS versus voice calls. Of those that responded to the inquiry of SMS/voice use (n=43), approximately 60% indicated that they use SMS at least occasionally. Voice, however, was by far the preferred method of communication, with respondents citing SMS as difficult to use, lacking sufficient detail, and more expensive than simply making a short phone call. The average age for individuals who indicated that they used SMS was 29 as opposed to 36 for those that did not use SMS. This suggests that there might be a difference in technology or service preferences by age group. This preference of voice communication is due to expenses associated with telecommunications infrastructure and complex, often cost-prohibitive pricing models for consumers and small businesses. Moreover, this can also point to the need for specificity in exchanging tourism information (location, cost, personal preferences, etc.) that can be better captured by direct person-to-person communication for confirmation and clarification.

Reasons cited for preferring pre-paid access included the apprehension to create a personal debt to mobile phone providers in the face of the informants' lack of a steady income that would guarantee payment. Information was also collected about the average monthly expenditure for cell phone services among informants. Among prepaid users, who represented the majority of respondents, 57% reported spending between R10 and R200 per month as illustrated in Figure 6.
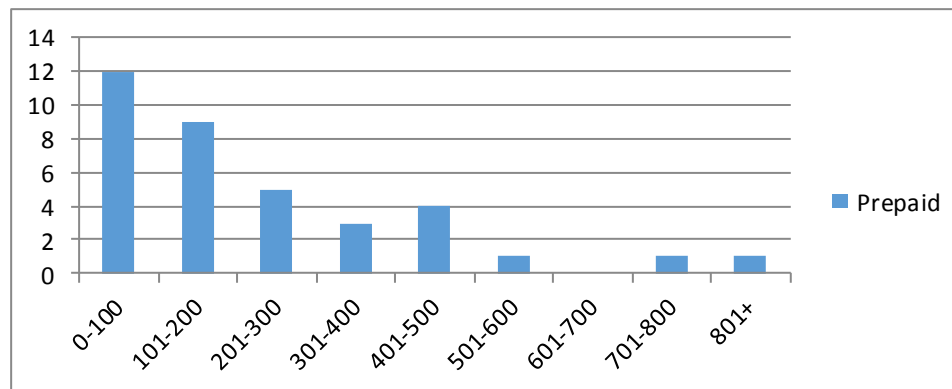

Figure 6: Prepaid Amounts Spent

The effect of income uncertainty leading micro-entrepreneurs to prefer pre-paid mobile phone services is compounded by widely reported ambiguity pricing schemes by telecommunications providers. According to Research ICT Africa, mobile service pricing transparency in South Africa is highly problematic by both consumers and regulators. "Operator tariffs are lodged with the regulator and approved by default after the prescribed period in which ICASA has to respond expires. These prices are never publicly assessed nor are analyses of the prices either nationally or continentally published by the regulator" (www.researchictafrica.net n.d.).

Entrepreneurial Economic Development

The data revealed that participants had a keen interest in establishing entrepreneurial enterprises. Only twelve of the fifty-two (or 23%) respondents indicated that they were not involved or interested in owning a small business as shown in Figure 7. One of the respondents, a 28-year-old woman simply declared that she "trust[s] no one." A 50-year-old woman indicated that she was not interested because she had "no knowledge about business." Other comments, however, ran counter to these positions with 77% engaged in and/or launching SMEs. Fourteen respondents indicated that they did not own a small business but would like to or planned to own one soon.
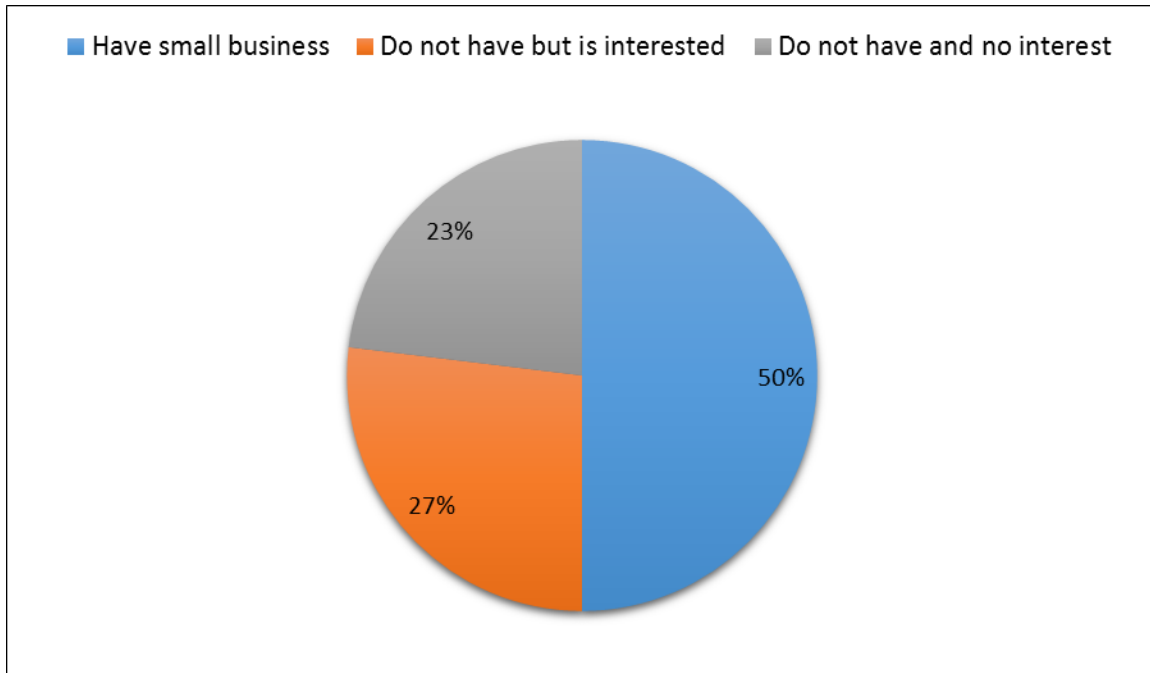
Figure 7: Entrepreneurial Activity/Interest

Participants expressed their interests in launching catering, hair care, bakery, and even agriculture (i.e., goat breeding) businesses. These were viewed as potential services for local and international tourists. Most pointed to a lack of start-up funds as the central constraint prohibiting business startups. As an example, a 26-year-old woman indicated, "No [I do not have a business], but I am very interested in opening a catering business. I haven't because of lack of capital." A 49-year-old woman explained: "It's very hard to do business in this country. To get funding you need business security, property, or a job even though it is hard. Being blacklisted in [ITC Credit Reports] means you cannot access money; you can get blacklisted even by default (for being black)." Further, a 56-year-old man indicated, "Funding … no banks will make a loan without collateral. Honestly the blacks can't get a loan. If a white man walks into a bank, in two hours' time he will leave with the money." These issues capture additional barriers to entry, including policy provisions associated with accessing and gaining financial capital, gender inequities, and possibly a lack of ties with people or organizations that support business activity.

Twenty-six respondents indicated that they were currently involved in entrepreneurial ventures. These businesses included sandwich shops, Internet cafes, spas, video and decorations for weddings, tour guide

services, and others – all targeting local customers from the township or village. When asked what was most difficult about doing business in their area, responses pointed mainly to limited markets. A 22-year-old woman, for example, responded, "There are products made by people, but there is no market for them (beads, vegetables)." Many respondents indicated that they had few customers and that their few existing customers were not always able to pay their debts. As a 26-year-old woman delineated, "People normally don't pay after they have been given the goods." Yet, international tourists were cited as a primary means of business expansion, and this was noted as central to those visitors coming to natural parks and nature preserves. Proximity to natural resources (and/or parks) is seen as a competitive advantage to spur growth of their customer base; however, none of the informants were able to articulate strategies to tap into the international nature-based tourism supply-chain.

Despite the fact that all three study sites were located adjacent to popular tourism destinations with vans, buses, and SUVs driving services, it was evident that existing businesses catered almost exclusively to local residents. A 68-year-old woman explained, "There are no outside relationships with other organizations or tourism agents. There are people, but it's hard for travelers to hear about my business." Thus, People-First Tourism should offer these micro-businesses a more significant and collective voice while providing the infrastructure to foster tourism partnerships with existing industry players.

Technology Stakeholders Economic Development

Challenges and opportunities identified by the corporate and government stakeholders fell into one of three themes. First, many comments focused on desired or necessary functional characteristics of an IT-enabled tourist network. Stakeholders noted that "the cell-phone enabled system would address key needs among current and potential rural tourism entrepreneurs, namely that of networking, collaboration, and coordinating their tourism service offerings." While these stakeholders were favorable towards the use of mobile phones to promote current and potential rural tourism micro-businesses, the stakeholders cautioned that People-First Tourism should carefully mediate currency exchanges between tourists and entrepreneurs. This could occur through an exchange comparable to the MPESA mobile banking currently supported by Vodacom. This Vodacom-supported system allows tourists to purchase services with air-time; and then micro-entrepreneurs can exchange that air time for cash at any affiliated sales booth. In addition, this technology could provide the monitoring and tracking functions that would potentially reduce unethical practices often associated with informal tourism service exchanges (Garrod, et al., 2001).

Second, the stakeholders made several recommendations regarding capacity building with participating individuals or communities. Training is vital for micro-entrepreneurial success and development; therefore, the project should include training on digital awareness and literacy, business code of conduct, and customer service. They also indicated "a representative from participating communities should be appointed to serve as mediator/ambassador/gatekeeper for the project." As with ecotourism models (Garrod, 2003), stakeholders described these mediator participants as community liaisons. The technology stakeholder participants articulated that data management and services will need to incorporate collection and organization of services and tourists' preferences. Hence, this is a service-preference match capability similar to Priceline, Travelocity, or Expedia to engender user experiences.

Ease of Use

We asked participants about the ease of use theme relative to mobile technology and an IT artifact. The mobile phone was viewed as a simple technology and easy to use, and the stakeholders agreed that the People-First Tourism system must be accessible via the mobile phone infrastructure. Participants discussed simplicity and ease of use in terms of the IT artifact providing a mechanism for improving engagement with local government and larger tourist enterprises. People-First Tourism was seen as an IT artifact that could potentially level the playing field between formal sector tourism companies and community-owned businesses because formal sector companies will potentially lose their monopoly of access to markets. The People-First Tourism "system" must engender trust and transparency within and among numerous groups or rural tourism entrepreneurs as well as amid larger, more financially stable national and global business partners. People-First Tourism could also assist with providing rural communities with a collective voice against exploitative business partners.

Lastly, stakeholders emphasized the need to nurture strategic partnerships to build and sustain infrastructure. They noted that once the system goes live, public-private partnerships will need to invest in a considerable marketing campaign. Accordingly, we were told: "it may be wise to pilot the project (People-First Tourism) in the domestic tourism market before rolling it out into prospective international target markets. The initial focus could, for example, be on self-driven [tourist] segments and special interest segments, such as local and international volunteer tourists."

Despite the efforts of NGOs and tourism providers, however, the majority of host communities are not significant players in the economic development of tourist industry. Rather, these communities are generally passive recipients of foreign investments – thus receiving smaller stakes in the economic gains of a potentially flourishing market. Scholarship focused on planning for sustainability have yielded modest progress in informing how tourism can play a critical role in mitigating human development disparities and environmental degradation. IS frameworks on MTIS can provide a foundation for ICT4D and the communities they are intended to serve.

DISCUSSION AND IMPLICATIONS

Our research provides insight into the user needs of an IT artifact, the People-First Tourism system, informed by mobile and temporarily interconnected systems (MTIS). As a virtual marketplace of tourism services, the project will allow South African entrepreneurs to sell their services to networks of independent tourists, or potentially to larger tourism providers. This work offers contribution to the MTIS theoretical framework. In our context, we recognize that MTIS can engender user participation to democratized tourism market spaces and places. This is particularly the case for domains that are otherwise influenced by large marketplace players in the tourism (and other) industries. Another contribution to the MTIS theory is the influence of ICT for development (ICT4D). In this research, ICT4D fosters both individual (micro-entrepreneurs) and national commercial development – thereby leading to economic participation in otherwise restricted markets.

For practice, one key finding of our research is that South African entrepreneurs are becoming more reliant on mobile phones to create and market their services. These under-resourced micro-

entrepreneurs prefer to use pre-paid mobile phone services because of income uncertainty, and they use both voice and SMS communication depending on the type of business demand. This finding is coupled with themes of utility, economic development, simplicity, and ease of use. Local South African participants spoke of the need to co-exist within the context of the IT artifact with sizable organizations in the industry domain to attract additional consumers – thereby expanding their services and geographical reach. These sizable tourism organizations could support the infrastructure to tailor services to potential consumers who can then communicate with the entrepreneurs via IT artifacts that bridge web and mobile phones.

Since this study's data collection, People-First Tourism evolved from an alpha prototype to the early implementation of a global People-First-Tourism social venture (www.peoplefirsttourism.com). While the IT artifact demonstrated viable utility in a mobile environment, user data enabled us to capture supplementary themes beyond the scope of IT but have a salient impact on the community context. On a more practical level, these supplementary themes focus on the economic infrastructure required for sustainability and are noted as:

- Training micro-entrepreneurs in efficient/effective/timely/affordable ways.
- Confronting the challenges associated with new micro-businesses competing and collaborating with existing and more established businesses.
- Identifying tourism services that are profitable.
- Addressing legal and pricing complexities associated with the sector.

Most current and aspiring micro-entrepreneurs participating in this study were keenly aware of one barrier to entry: the lack of financial resources. Since the goal of this project is to fuel and leverage ICT innovation to foster a more equitable development, it is important to give this reality due consideration. Under-resourced micro-entrepreneurs face persistent lack of funding, and this handicap is inherently related to racial disparities, health and education gaps, and even legacy of exploitation and deceit by academics, governments, and corporations. Therefore, continued scholarship converging insights from information sciences, critical social sciences, business, and computer science are needed for the development of an impactful People-First Tourism system and venture.

Tourism management scholars (Hall, et al, 2012) have offered that these issues illustrate the need for entrepreneurship, innovation, and social inclusion policies, if an enabling technology infrastructure will emerge as ICT4D as offered by Waltham (2012). Policies addressing both economic and social perspectives may foster more productive entrepreneurial outcomes, albeit at a more constrained economic pace. Entrepreneurship may be particularly important in under-resourced regions because economic and social problems are more pressing despite the lack of adequate resources to address these problems (Hall, et al, 2012).

In sum, we offer reflections of the implications for our study:

1) Engaging with local technology stakeholders to garner their involvement in public-private partnerships. Tourism scholars (Usher and Morais, 2010) have embraced this concept for social and economic development in global communities to foster natural resource sustainability. Likewise, IS scholars (Unwind, 2009; Waltham, 2012) have provided unambiguous calls for the field to embrace interdisciplinary approaches in areas, such as ICT4D research. Waltham (2012, p. 91) points to the proliferation of mobile phones and social networks as examples where IS can promote this mutual learning.

2) Enabling the local South African small businesses to use mobile technology to leverage the local and natural resources to support tourism. This can enable the IT artifact to emerge (iterative) as a professional network of stakeholders: entrepreneurs, larger travel service organizations, tourists, and tourism partnerships. Figure 8 provides a screen capture of how the IT artifact has evolved with a brief explanation for each of the four stakeholders. Figure 9 shows the homepage of the system at an early implementation stage.
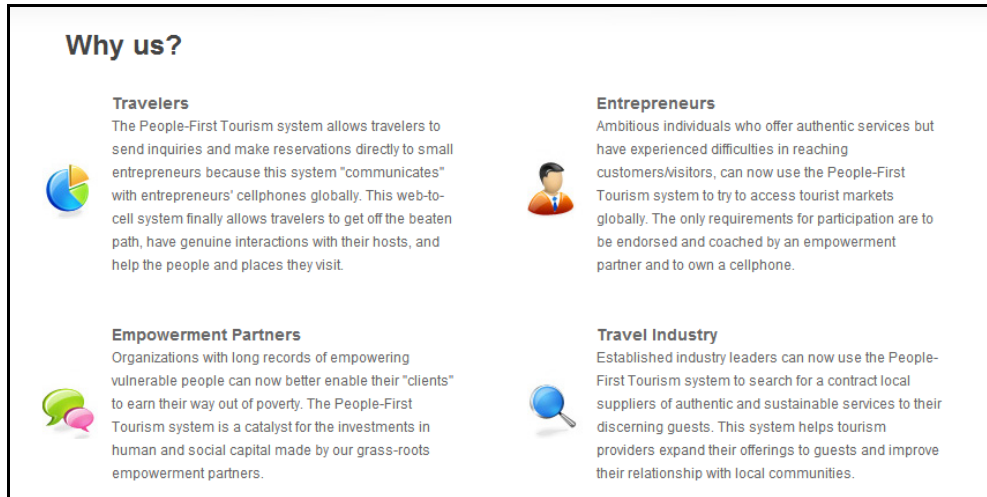
Figure 8: People-First Tourism Beta iteration Screen Capture at
http://www.peoplefirsttourism.com/
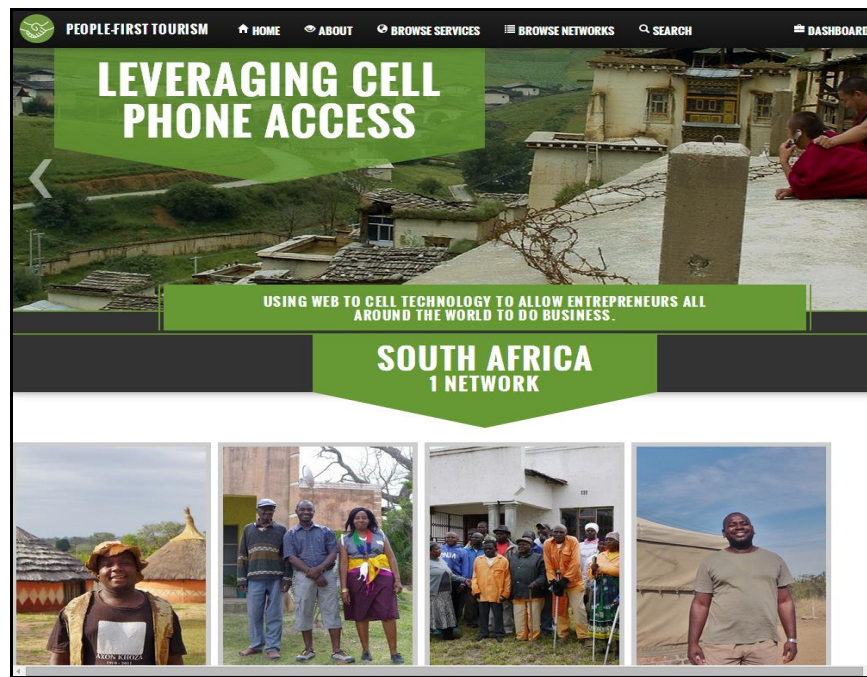
Figure 9: People-First Tourism early implementation at
https://www.peoplefirsttourism.com/South_Africa/

3) Engendering access to capital and business networking for those residents with entrepreneurship interests. These themes are similar to those delineated in Mbarika, et al (2007), and can be summarized as a need to address and overcome significant structural barriers, such as public policies, which can fail to facilitate the development of the ICT sector, reduce gender discrimination, dampen racial discrimination by financial outfits, and promote training needed to improve technical skills to enable entrepreneurial success. The findings in this study confirm that People-First Tourism and indeed any ICT for Development initiative must be accompanied by support services that mitigate the underlying causes for the challenges faced by the target population.

CONCLUSION

The People-First Tourism system has experienced a gradual evolution, and the initial IT artifact has been well received by the stakeholders and intended users involved in this study. Our findings recommend that under-served rural entrepreneurs are exceedingly ambitious and are often operating numerous micro-ventures catering to the needs of those in their communities. They have difficulty accessing capital and customers with sufficient income. Further, these entrepreneurs have meager ways to capture and sustain business in the tourism industry, even if tourists are centrally and conveniently located in nearby destinations.

User involvement for MTIS is not a single event, unlike traditional single-sourced IT applications. Rather, it is a revolving process and often situated in interdisciplinary contexts that should be embraced. IS scholars (McKay, Marshall and Hirschheim, 2012) offered this as design science – thereby embracing interdisciplinary field frameworks and approaches as well as users' experiences. Notably, Sein, et al. (2011) advocate that emerging IT artifacts should not evolve solely from the influence of designers but remain attentive of the problem formulation and the users involved.

We espouse interdisciplinary research to address issues of ICT4D, particularly in under-resourced regions. Herein, IS provides the design framework to guide the tourism domain and its underpinnings of community development and environmental conservation while uncovering an IT artifact and the user involvement needed in MTIS research.

This research is not without its limitations. This research is based on a small group of local entrepreneurs, both current and aspiring, and a convenient sample. Future research can aim to capture the views of a larger sample via survey methods. This research speaks to the economic impact of the People-First Tourism system. Future research can focus on measuring the impact of the system via the ICT4D as noted in Figure 1.

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Appendix A

Stakeholder interview protocol

1) To get started may we ask you to confirm that you are at least 18 years old? Yes/No

2) How would you characterize cell phone use in rural communities?

3) What kinds of packages are most popular? How much do people usually spend on cell phones services monthly?

4) In what ways do people use their cell phones? Voice vs. SMS; business vs. socially vs. emergency.

5) Please give examples on ways in which cell phones are helping improve the wellbeing and livelihoods.

6) What are some examples of products and services individuals in rural communities can offer to tourists and to tourism businesses?

7) What factors constrain their involvement in the tourism industry?

8) In what ways could cell phones be used to overcome those constraints?

9) Let's watch the START Network video again to help us switch gear for our last few questions.

10) In general, what do you think about the START Network concept?

11) Who should own or host this network?

12) What would be the best revenue model for the venture so that the system is economically self-sustained and it successfully serves rural individuals interested in becoming entrepreneurs?

Appendix B

Community member interview protocol

1) To get started may we ask you to confirm that you are at least 18 years old? Yes/No

2) Do you own one or more cellphones? Which provider? Which brand and model?

3) How much do you pay for cellphone services monthly? What kind of package do you have?

4) In what ways do you use your cellphone? Voice vs. SMS; business vs. socially vs. emergency.

5) In what ways could cellphones be used to help you improve your livelihood?

6) What are examples of some health problems facing your community? How about examples of things that give you good health?

7) What are examples of frustrations keeping you from prospering and engaging in fulfilling work? How about positive things about your work?

8) What are examples of problems you feel in regard to your relationships with friends and family? What are some examples of good things about your relationships with friends and family?

9) What are examples of problems in your relationship with the natural and spiritual world? How about examples of good aspects about your relationship with the natural and spiritual words?

10) In what way are you involved in the tourism industry?

11) Would you be interested in developing a small tourism business? What kind?

12) What factors constrain your involvement in the tourism industry?

13) What do you and your community have to offer to tourists?