

Ethical Considerations for Usability Testing in Kenya using Kiswahili and English

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ABSTRACT

This paper describes a user-based evaluation of an Information and Communication Technology (ICT) system that is being developed as part of an initiative by the Kenyan Ministry of Agriculture in collaboration with the University of Nairobi and the Local Language Speech Technology Institute based at the University of Bristol. The system is intended to provide key information for farmers about growing bananas to enable them to become aware of better farming procedures, including planting requirements and identification and prevention of disease. The system uses telephone text as an input and speech as an output, both in Kiswahili and English. The participants spoke either English or Kiswahili and had varying levels of literacy; the majority had never used ICT before.

Author Keywords

User testing, rural users, literacy, cross-cultural evaluation.

ACM Classification Keywords

H5.m. Information interfaces and presentation (HCI): H1.2 Human Factors

INTRODUCTION

Kenya consists of residents from many different cultures. 8.08% of the land is used for arable farming, 0.98% for permanent crops and 90.94% for other use; 670sq km of the land is irrigated (Central Intelligence Agency, 2006) – it is amongst these conditions that farmers need support and direction to plant, tend crops, treat disease, harvest and export bananas successfully. Access to agricultural information is difficult as the farmers are often in remote rural locations with no access to books or the Internet and rely on support from visits by national extension agricultural workers. The population of Kenya is around 34,000,000 and is made up of 42.5% 0-14 years, 55.2% 15-

64 years and 2.3% 65 years+; the median age is 18.19 years. By the end of 2001, Kenya was host to 220,000 refugees from neighbouring countries particularly Somalia and Sudan (Central Intelligence Agency, 2006). The population of Kenya is sub-divided into the following ethnic groups – Kikuyu 22%, Luhya 14%, Luo 13%, Kalenjin 12%, Kamba 11%, Kisii 6%, Meru 6% and other African 15%, non-African 1%. In this case study, the users in the usability tests belonged to the Kikuyu ethnic group.

English and Kiswahili are the official languages of Kenya. Both are taught in school and are equally popular, however rural Kenyans prefer to use their traditional tribal languages. There is not an area of Kenya where people cannot speak Kiswahili but there are many places outside of the towns where English is not spoken.

User Based Testing

Research suggests that only between 30% and 40% of ICT systems produced are ever successfully implemented and used for the purpose for which they were designed. While it is widely recognized that user-based testing can improve this, Gray et al (1998) consider that although practitioners in Human Computer Interaction (HCI) have been very interested in interface design, this interest has not been extended to the design of experiments and that reliable and valid guidance for actual interface design depends on the results of the tests. It is vital that researchers have an understanding of how small features of an experimental design can cast large shadows over the results and conclusions that can be drawn from them.

In this case the interface of the ICT system being tested relies on end-users accessing information by pressing telephone buttons to select from a menu which gives speech output.

Ethical Background

Ethics can be regarded as the rules or standards governing the conduct of individuals or groups. One of the problems is the confused approach to computer ethics by society, governments and academics. The principal question for ethics is not, as the formalist would have it, “What rules should I obey?” but rather, “What intentions should I adopt?” The Economic and Social Data Service (2005) states that it is a fundamental ethical principle of research to ensure that participants give consent and that they enter into the research voluntarily, without coercion and in the

knowledge that they can withdraw at any time, confident in the knowledge that there will be no adverse consequences of participating in the research, including the preservation of anonymity if they wish. Ethical issues regarding research methods have been primarily concerned with protecting subjects involved in research. Cassell (1980) states that over-attendance to hierarchically imposed guidelines may be irrelevant in field research and may lead investigators to ignore ethical guidelines that seem inapplicable to their work, or to deny that there are even ethical problems associated with their research. He states that inappropriate regulations may do more harm than good and such a narrow conception of ethics not only fails to recognize the breadth of ethical decisions and judgments that are made, but it also serves to broaden the gap between researcher and researched. Allen (1984) states that it is important to conduct tests, with human subjects, who cannot be subjected to any form of destructive testing, with deep respect for the users' emotions and well-being.

Although risks of becoming physically harmed through usability testing are negligible, undertaking testing can be stressful for participants who may feel pressure to perform and may worry about being slow at learning the systems, suffering inferiority complexes if they struggle in the knowledge that all this is under observation. Therefore, it is important that the evaluator makes the users feel as comfortable as possible during and after the tests, making it clear that it is the system that is being tested as opposed to the users (Nielsen, 1993). Case studies relate how western researchers undertook usability testing in Asia with users with specific learning difficulties who abandoned the testing in a state of distress because the experimenters had not considered ethical issues. A key ethical consideration is literacy as residents in the more rural areas are more likely to be illiterate and this must be one of the most sensitive areas to address in usability testing. The question "can you read or write" is pointless if the participant cannot read, likewise it is against ethical guidelines to subject the participant to any humiliation by directly asking them this question. Therefore, it was decided to approach this ethical dilemma by having a transcriber present at all tests.

Usability Evaluation in Practice

There were significant problems with the user testing with five attempts to conduct the usability tests on the system over a four-week period. Poor telecommunications meant connectivity was extremely unreliable. Although the Kenyan government is making attempts to modernise, one company has had the monopoly of supplying the service which is directed to business use. Trunks are primarily microwave radio relay with business data being commonly transferred by a very small aperture terminal (VSAT) system. Statistics for 2003 state that there are 328,400 main line telephones in use, with 1,590,900 mobile cellular telephones and 8,325 Internet hosts with 400,000 Internet users (Central Intelligence Agency, 2006). Thus weekends or late evenings would be the only time that end users were

able to connect reliably to the system. This was identified as a key weakness that would restrict the accessibility and acceptance of the system by the farming community who were already inexperienced in using ICT. We designed the tests which were undertaken in Kenya under the direction of the University of Nairobi. Following the pilot test using 3 participants in which connectivity issues were identified, full testing later took place with a further 10 participants at their own farms. At the start of each test, the users were asked verbally if they would like the tester to complete the forms for them. This eliminated any embarrassment that they could not read or write. The consent forms and task sheets were formatted using tick boxes and multiple choice questions so that the participants had to write as little as possible – because even if someone can read, it does not mean that they are confident to write also.

Another ethical consideration was for participants who could only communicate in Kiswahili as the tests were all written in English. It was therefore decided that a translator should be present at all tests but ideally this should be the same person as the transcriber to minimize the amount of persons present to reduce anxiety for the participant.

Findings

Following strict guidelines for ethical issues and overcoming technical difficulties, testing was successfully completed in Kenya on the target user group of banana farmers, all from the Kikuyu tribe without causing any distress or humiliation whatsoever resulting in valuable data being obtained which is being analysed and evaluated. 60% of the participants could be classed as "older users" aged 41+ who are traditionally less inclined to want to embrace ICT. 80% of the participants had never used a computer before and only 30% used a telephone on a daily basis; 10% of the participants were illiterate. From testing this system technical weaknesses were identified in the ICT available in Kenya; the technical developer is now researching further into possible approaches to overcome this.

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