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VALIDATING CULTURAL AND CONTEXTUAL TRAITS OF A COLLECTIVIST COMMUNITY

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Abstract. Sub-Saharan African communities are classified as collectivist societies. But, what exactly is meant by collectivism and to what extent individuals adhere to this given the differences in their socio-economic conditions? This paper is an empirical exploration of the contextual and cultural traits of a rural sub-Saharan African community in order to facilitate their interpretation towards technology design and adoption. Card sorting is used to validate and make explicit contextual and cultural traits previously identified during interviews. It is a confirmation of the collectivist nature of these cultures with more details such as eagerness to confirm personal views and requirements with that of the group in order to save "face", among other traits.

1. Introduction

In designing or adapting technology for a lesser known user group, many would agree that context and cultural elicitation are a de facto primary stage of the process. Be it via ethnography, probing or prototyping, it is imperative to acquire some degree of understanding and interpretation of the context and culture in situ.

Assumptions of cultural and contextual traits of a user group by designers can be forgiven, or generous to some extent, if the user group has previously been subject to rigorous and well documented studies that can serve as a reference. It is even more forgivable when the designers and the user group come from the same context and culture. For example, when designing or adapting a technology for Western users, a Western designer may benefit from a vast body of knowledge that allows some latitude of interpretation, for at least the initial prototypes. Technologies and approaches such as designing graphical user interfaces; designing for different senses (speech, gesture, handwriting, voice, etc.); mental models of learning and understanding; models and theories of system development have all been developed and applied as part of Human Computer Interaction (HCI) research in Western cultures (David, 1984; Hofstede & Hofstede, 2005; Sears & Jacko, 2008). This is not to say that contextual and cultural elicitation no longer needs to take place in the West; it merely assumes that some valid body of knowledge for Western culture and context already exists.

By contrast, the limitation and the lack of standardised applications or information systems even at a regional level in Africa, begs for more HCI research in methodology, cultural and contextual understanding. Some instances of generalised (Biljon & Kotzé, 2007; Hofstede, 2001) or localised (Heukelman & Obono, 2009; Slay & Dalvit, 2008) contextual and cultural studies offer a starting point for a rationalised mapping and research validation. However, even those studies need more instances and some minimum level of validation to provide a comprehensive interpretation. For example, sub-Saharan African communities are classified as collectivist societies and justifiably so (Hofstede, 2001; Oyugi, Dunckley, & Smith, 2008). However, this view can embody many complexities when it comes to designing systems at which usage is at the individual level. An ICT may be developed for the whole community. But the acceptance, adoption and use of the system envisaged are dependent on individuals' ability, motivations and context (Biljon & Kotzé, 2007; Byrne E., 2003). Therefore, is the collectivist characteristic of a community ratified at individual level, when there are obvious differences in wealth and education for instance?

This paper proposes an approach to validating and making explicit what those initially identified collectivist characteristics mean for a rural sub-Saharan African community by the use of a mix method. Semi-structured interviews are preferred here as a mean to gathering requirements and exploring context and culture. This approach is then augmented with card sorting to validate findings and explore possible underlying traits. While individuals may have total control of what they say or explain during an interview, they are more likely to unconsciously and instinctively make explicit their mental model and true meaning they personally attach to the perceived community context and culture. The study therefore aims to help explain or ground the collectivist characteristic attached to African communities.

The study took place in a rural community in Kenya in the context of the VeSeL[1] project.

2. Background of the Study: VESEL project

VeSeL was a research project and part of the BGDD (Bridging the Global Digital Divide) initiative of the UK government. It aimed at identifying and developing suitable Information and Communication Technologies (ICT) for groups of rural farmers in Kenya, in order to promote e-Science in education and provide local communities with access to information to improve their farming practices and the profitability of their produce, thus improving quality of life. The project lasted for three years from September 2006 to November 2009.

VeSeL was a multi-disciplinary project involving five UK universities plus one local institution in Kenya (ground of research), with specialists in education, Human Computer Interaction (HCI), power engineering, computing, communication technologies and agriculture. The objective was the identification of novel ways of developing or adapting existing ICTs that are actually useful to rural communities in

[1] VeSeL: http://www.lkl.ac.uk/projects/vesel

developing countries. A good fit between the users' needs and aspirations and the ICT products developed was therefore paramount.

Following an initial study in collaboration with the local partner, the University of Nairobi (UoN), two communities in Kenya were identified for a parallel development of ICTs. One site, located in central Kenya in Kiangwaci, focused on the information needs of farmers to plant, tend and bring to market the most appropriate crops for local and EU consumers by making effective use of irrigation and pest control measures. Figure 1 shows the rich Kiangwaci landscape.

Figure 1. Fields and water in Kiangwaci

The second site in Kambu, in the south of Kenya, has drought problems that needed support via crop selection and irrigation management. Figure 2 shows the precarious Kambu landscape.

Figure 2. Fields in and water in Kambu

In each site, one local primary school and one farming community group were identified. It is common practice in Kenya for farmers to organise themselves into self-help groups based on the crops they grow, or into buying groups for price control and competitive advantage.

Once the communities were identified, VeSeL engaged in identifying cultural and contextual characteristics of the two selected rural communities (Kiangwaci and Kambu). VeSeL designers prepared a "solution designers' resource kit" consisting of a variety of technologies and methods which could be combined, adapted and appropriated to support a participatory exploration of users' ethnography and requirements to inform possible technological solutions.

3. Contextual Inquiries

The solution designers' resource kit included interview questions on farming activities, problems, communities' communication and learning patterns, etc. Observations and "cultural probes" using cameras, mobile phones, voice recorders and image viewers such as iPods also took place. Cultural probing is a method of stimulating users to expose, for a greater understanding, their lives, thoughts or perceptions in an informal and open-ended approach (Boehner, Vertesi, Sengers, & Dourish, 2007).

In addition, localised usability evaluations were also planned through mobile phones, a local website previously designed for one of the rural communities and card sorting. By localised usability evaluation we mean, engaging with users and getting them to reveal their sensibilities or preferred approaches to existing ICTs using adapted (localised) contents to yield culturally valid requirements and to learn the meaning of technology and the perceived usefulness in this context. Card sorting is a technique for exploring how users group items to help designers develop a structure or information architecture. The scope of this paper is limited to the activities of validating and extending the interview questions with card sorting in one of the communities (Kiangwaci).

3.1. INTERVIEWS

A semi-structured interview was prepared to be conducted with each of the self-help groups identified. In Kiangwaci, the self-help group (Kaaria) had 19 members and in Kambu there were 16 members (Mtito-Andei Development Initiative).

The interview questions for each member focused on their farming activities and resources; types of crops grown; problems they face; their ambitions and objectives; their choice of self-help group; what they see/understand within the group in terms of decision making, leadership and management, benefits, problems; their preferred learning patterns (time and place); where precisely they think VeSeL should help them and their communities; what they see as successes of the group and also individual success stories; etc.

These activities took place in farmers home comfort and sometimes while carrying on their farming or showing researchers around.

Figure 3. Farmers in their shamba during interviews

At the end of each day of interviews, researchers reconvened to review the interview data, and clarify or plan to clarify any missing answers or misunderstood responses. Responses from the day were formatted into a report with clear headings of the key interview questions. Matching and different responses were clearly recorded with nothing omitted at this stage. This mini analysis of the data aimed at facilitating subsequent analyses of all interviews.

Because of the limited number of interviewees and the mini analyses that took place on a daily basis, it was relatively straightforward for the researchers to tally the data and prepare a general report of this activity. The interview provided much ethnographic information of the community in terms of its characteristics, environment, tasks, values and views. Some of the most pertinent findings were that:

- Farmers expressed a great deal of trust and valued the self-help group as it allowed them to make the most of their crops.
- For those who did not own land and were forced to rent from other community members, they expressed the hardship and effort they had to put into their farming activities to make ends meet.
- A great disparity existed between farmers based on their education level and means. Those who had a higher level of education, tended to have bigger shambas (fields) and more tools such as motor pumps for irrigation, water tanks, better storage units (seed banks) and thus bigger and better houses.
- In Kiangwaci, farmers practiced mixed farming to make the most of their time, resources and continuous production rota. For example, while one set of French beans was maturing, another one was germinating. After the harvest, another type of crop was grown in its place to re-fertilise the soil.
- All farmers interviewed expressed the difficulty of getting a better return on investment in their produce.
- While some farmers trusted agricultural extension officers sent by the government or buyers who advised on pesticides and practices, others had mixed feelings after a single experiment or advice had gone wrong. Richer farmers coped easily with a bad experiment and tended not hold a grudge, but poorer ones had deep resentment and doubts about any similar initiatives.
- Due to the self-help group initiative, farmers all tended to grow the same crop for income generation even if this practice might lead to abandoning subsistence crops (crops for their own food).

Because of these group activities and practices, it was hard at times to identify farmers' individual interpretation of their context and culture with regard to the perceived farming and group dynamic. It could be argued that this was due to their collectivist nature. Collectivism is a cultural pattern that is more common in Asia, Africa, the Middle East, Central and South America and the Pacific, (Hofstede & Hofstede, 2005). Members of collectivistic cultures avoid being direct or contradictory as they are highly sensitive about the effects on others of what they say. For example, it is hard for speakers in this kind of culture to deliver a blunt "no" (Ting-toomey & Kurogi, 1998).

Often farmers would ask researchers, after some level of familiarity and comfort had been established, about what other group members had identified as problem areas,

views of the group or ways forward. This was where researchers had to show tact and advanced communication skills in restructuring the interview to explore, if at all possible, the silences and sensibilities. But at time, these questions were simply to see how they compared (farming) with others in the group. Figure 3 shows a proud farmer with her produce.

Figure 4. Farmer Janet proudly shows off her avocados

Although the degree of collectivism was apparent from the interviews, it was also clear that VeSeL needed to further unpack the subtle individual meanings attached to each community's context and culture. Since the yet to be developed technology was not known at this stage, it could have been ethically fatal or at the very least not user centred to ignore individual members' interpretations of their context and culture. Should there be some hidden individualism or silences and sensibilities, what it is and how significant it is need to be explored and made explicit. Card sorting was therefore envisaged after all interviews were conducted to help validate and further explore members' mental model.

3.2. CARD SORTING AS VALIDATION AND EXPLORATION OF THE INTERVIEW

Card sorting is a technique usually adopted to gain knowledge of users' mental model for representing domain knowledge. It is a requirement gathering technique since it helps explain how users expect information to be organised and accessed (Nurmuliani et al., 2004). Organising or sorting information presupposes some preferences, applying logic or an understanding and interpretation of the information concerned. When using an open card sorting activity, where users have the freedom to define labels or names for the different clusters of the sorting results, the technique provides further insight into users' perceived meaning, priority and interpretation of the information sorted. VeSeL researchers sought to verify if those preliminary findings from interviews were in any way hiding deeper individual traits that could be deterministic of future interactions and solutions by organising some card sorting activities.

While conducting the interviews, researchers were also taking pictures to illustrate as much as possible community members' responses. Pictures of farms (crops and livestock), pests, water resources, school activities, aid activities, homesteads, etc. were all reviewed by researchers to identify a sample set for the sorting exercise. In total 23 pictures were selected with a minimum of two or three in each category identified. Since the focus of VeSeL was in farming and education, these two categories were

predominantly represented according to the responses from the interviews. For example, the farmers consistently reported pest control or water management issues. The pictures therefore showed different types of infested crops and water flows. Other pictures of successful crops were also included.

Shambas (farming fields) in Kiangwaci, especially those of the self-help group identified, are very similar to one another, probably due to the fact that they grow almost the same crops. Therefore, selecting pictures for the sorting was not a complex task and the quantity was fairly controlled and limited. However, selecting the number of users for the sorting activities required some degree of interpretation and adaptation.

While some recommend that the number of users for card sorting should be triple the initially recommended five users for standard usability testing (Nielsen, 2004), others suggest 20 to 30 participants (Tullis & Larry, 2004). The main reasonfor this number in the former research is that in standard usability testing, there is already a system or prototype to evaluate; whereas card sorting is used to actually identify some structure or requirements for a system or prototype. The latter study argues that homogeneity of the participants and issues such as instructions given to the participants in the sample can influence the result if the number is greater.

However, none of these studies makes a direct connection to the actual size of the population. If the target users are 30 or fewer, should we conduct card sorting activities with all of them? This may not be possible in some cases where budget limitations, access to users, time and location constraints are difficult to control. In VeSeL, the researchers decided to use five participants (more than 25% of the group) for the sorting activities. The five participants consisted of two women and three men with an age range of 24 to 55. All were heads of families, as were all members of the Karia group.

The sorting took place in each of the participant's homesteads for their comfort, and with no set time limit to perform the tasks. The activities provided some more clues as to what had already been identified.

3.2.1. Results

In general the sorting activity ran smoothly on every occasion. However, none of the participants could perform more than two sortings (criteria) with the exception of one who performed sorting on three criteria. This could have been due to the limited number of cards (pictures) to be sorted. It could also be argued that because of the farmers' familiarity with most of the cards, they could not attach any other meaning to them than what the cards actually represented in their context and culture.

Interestingly, each participant provided at least nine clusters of cards in the first sorting despite the limited number of cards. Some of these clusters had only one or two cards. In the second sorting, once they had now faced their familiarity with the cards, the participants still managed to identify at least 7 clusters.

Nonetheless, as we were more interested in the meaning they attached to each cluster rather than the cards' frequency in a cluster (hierarchy or grouping), we did not conduct a cluster analysis per se. We instead tallied the five participants' sorting sheets on a big table and analysed patterns, homogeneity and naming. We found that three of the five participants in their first sorting started with a familiarity criterion based on community life. They provided criteria such as: "the way we live", "places I recognise/sites" and "farming". The other two participants cited "beauty" and "cultural

meaning" but only in their second sorting. Based on these criteria, we found that participants concurred with our initial understanding of their context and culture as they identified categories such as: water resources or river, farming or farm products, livestock or livestock feeding, homestead or housing or construction. We further observed the cards clustered under each similar category to confirm similarity in the meaning or naming provided.

The result of this sorting served to validate the interview results in terms of understanding and interpretation of meaning attached to the view we had of the communities through the interviews. Nonetheless, further analysis revealed another dimension of the community's mental model. Some of the categories showed clusters of cards based on their economic value or impact within community life. Four of the five participants created categories such as "high value crops" or "commercial crops", "consumed locally", "exported" and "survival crop". When we explored the cards associated with these categories, we observed that high value or commercial crops were more respected than those consumed locally or survival crops. Also, we noticed that during the interviews, farmers spent more time demonstrating the extent of their knowledge about these crops than anything else. We did not explicitly identify this meaning attached to their farming practices in the interviews.

Furthermore, no specific classification was made in terms of education despite the number of cards related to school activities (forming lines, playing, different uniforms, etc.). Farmers did not try to cluster any specific school activity and grouped them under "school" or "education" or "schooling". It could be argued that the sample participants did not include teachers or pupils. However, it was discovered in the interviews that farmers always ensure that their children go to school and that farming activities do not prevent them from doing so. More clustering took place around farming pictures than any other pictures provided.

4. Conclusion

The interviews gave us a general feeling of what this community is about and what they need to improve their activities thus, their lives. They showed a sense of togetherness, relating common problems and success stories. The farmers also showed an eagerness to confirm their personal views with those of the other members of the group. If anything, this was proof of belonging or keeping "face".

Despite their suspected individual traits in the interviews, the farmers did not really reveal these in their card sortings. It may be that they expected us to assist them in balancing the wealth divide that was apparent in the group. But it was not because individuals had knowledge or expertise they were keeping to themselves. Interviews augmented with card sorting reveal that the farmers all had more or less the same meaning and interpretation of their lives, resources and activities. Their individual traits were not significant enough to considerably impact community initiatives.

Through interviews and card sorting, we managed to validate the perceived collectivism of an African rural community. But most importantly, we have underlined the need to make explicit what this collectivism actually means in a rural context. The

study shows and adds some details as to the extent of the cultural traits and its significance among the community members.

This study could be considered as proof of the African collectivistic cultures. However, similar studies need to be undertaken to allow cross-comparison towards a generalised validity of the concept and full mapping of rural sub-Saharan African culture. Furthermore, for whatever culture is studied or targeted, the underlining traits need to be validated or confirmed based on the context envisaged. This study was limited to farming communities and to their practices. Therefore, questionnaire and cards may have been consequently tailored and limited.

We recognise and recommend some improvements to this study to add rigour and to cater for more cultural and contextual features, especially in the sorting activity. For instance, the sample could also include teachers and pupils in addition to looking at communal resources such as churches, rivers, roads, festivals etc. It could be that the way participants interpret communal values and rites will shed more light on the interpretation of a community's context and culture. Nonetheless, focus should always be around what is intended and for whom.

With regard to technology design and for these communities, individual requirements must be in line with that of the group to guarantee non repudiation and to optimise acceptance and adoption. Findings from this study suggest the need for ensuring that individual achievement or performance is only important when compared to that of the group. It may actually be easier to identify metaphors and optimise adoption when the design takes place around identified group traits.

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