Understanding the cultural disparities in the approaches taken when learning new technology, in form of smartphone usage by Rhodes University students from two different ethnic dispositions

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1. Introduction

1.1 Background

The growth rate of mobile phone usage in Africa is higher than the rest of the world (Scott \textit{et al.}, 2004). The technology available on these mobile phones, mainly designed for the Western and Eastern populations, is rapidly evolving as designers and engineers keep working to produce devices that are intelligent and make life easier. Hence, there’s a need for Africans, above all, to be constantly learning this technology. Researchers in information technology (IT) and cognitive psychology have summarized the strategies users adopt when learning new technology as; the user manual, expert consultation and trial & error (Lauer \textit{et al.} 1992; and Puustinen & Rouet, 2009, Zimmerman and Pons, 1986).

Cultural differences in user interactions and assistance systems when using mobile phones have been observed among participants from Germany, China and USA (e.g. Leiber and Spanner-Ulmer, 2009). Several studies have indicated that learning strategies are also influenced by other user-dependent characteristics or factors namely; information technology experience (Mao and Palvia, 2008), age (Kangas \textit{et al.}, 2008 and Oksman, 2006), education level (Haverila, 2013) and to a greater extent, gender (Colley \textit{et al.} 1995; Passig & Levin, 2000).

1.2 Statement of the Problem

There is little literature available on cultural difference in IT usage and learning among South Africans. This study was set to ascertain whether there are cultural disparities (denoted by ethnicity and mother tongue) in the approaches taken when learning new technology, in form of smartphone usage, among participants within the South African cultural context.

Gender differences were considered as a secondary objective of the study because studies have found gender as one of the main factors affecting user perceptions in mobile phone usage.

2. Method

2.1 Experimental Concept

The procedure of experimentation involved a select group of participants going through an individual testing session each, where they were asked to perform a set of tasks/functions on a Samsung Galaxy smartphone. In this testing session, they were offered three help or learning assistance options; a user manual, expert consultation, and a trial and error option. As they performed the given tasks on the smartphone, they were at liberty of utilizing any of the given learning assistance options in whatever combination and frequency. Thus, they mapped out a learning strategy pattern that was then noted down and analysed by the researcher.

User test were conducted with different population groups; black Xhosa (four males, five females) and white English (four males, five females) speaking participants. Dependent variables were the learning assistance options:

- Strategy I - Trial & error (participants find solutions on their own)
- Strategy II - User manual (refer to computer-based manual)
- Strategy III - Expert consultation (ask an experienced user)

Subjective measures to assess perceptions over strategy preference and effect of computer literacy were considered. Controlled variables were; Age (18-24 years age group), Information Technology experience and Education Level (first year Humanities students, not studying computer science)
2.2 Procedure

Participants were given a set of tasks to complete on the Samsung Galaxy SIII smartphone in a single testing session. For each task, the adoption of learning strategies was assessed, i.e. starting and final strategies. Each testing session was recorded on video (figure 1) for a later review during data analysis. A post-test questionnaire was administered to record subjective measures.

Figure 1: (LEFT) Black Xhosa speaking female and (RIGHT) white English speaking male manipulating the Samsung smartphone to complete the given task list, using the computer-based manual, expert consultation or the trial & error assistance strategies.

3. Results and Discussion

3.1 Cultural Comparison

Figure 2. Comparison of the strategies opted for by the two cultural groups, i.e. English speaking and Xhosa speaking groups (left: starting strategy, right, final strategy).

Figure 2 indicates that the trial and error strategy had frequency of use percentage of 83% and 84% for the English and the Xhosa speaking groups respectively, as the starting strategy used. More participants in the English than those in the Xhosa group retained the trial and error strategy as their final option, and more participants in the Xhosa group than the English group used the expert consultation option (Figure 2).
These findings can be explained by the preferences given in figure 2 where the majority of the English and Xhosa speaking participants vouched for the trial & error and the expert consultation strategies respectively. The user manual was not popular in both groups, but its higher usage in the English than the Xhosa group was suggested to be a language barrier factor where the manual was offered in English.

Also due to the manual being computer based, the English group whose rating of IT experience were perception of the effect of their computer literacy were higher, used the manual more.

However, snobbism, a cultural factor described in literature, might be prevalent within the Rhodes University student population where most students are from affluent backgrounds thus reducing cultural differences in their interaction with technology.

### 3.2 Gender Comparison

Males and females mainly used trial and error as their starting strategy as shown in figure 6 but switched for the final strategy (figure 3) with higher frequency of use of the expert consultation and trial & error being for females than males.

Subjective data showed that males preferred both the trial & error and expert consultation strategies whereas females placed the trial & error as their ultimate first choice (figure 3). User manual usage was low for both gender, but slightly higher for females than males, owing to a few of them having indicated their preference of the strategies for both first and second choice.

Females rated their ease of manipulation of the smartphone higher than males, tallying with their high IT experience as well, hence the trial & error strategy was most popular for females.

In contrary, certain studies have observed males to have more IT, especially computer experience than females. However, in terms of mobile phone usage, females have been shown to outrun males by a sizable margin. Thus explaining while females in this study had the trial & error option as their most used learning assistance strategy.

### 4. Conclusion

The hypothesis made was that there would be cultural and gender differences in the approaches taken to learn new technology. High IT experience ratings were found to be associated with the propensity of the trial and error usage for the English speaking group, whereas the Xhosa speaking group seem to have preferred expert consultation. In term of gender females seem to have preferred the trial & error group whereas male participants seem to have preferred expert consultation. Consultation of the manual played a
minor role for all participants. Subjective ratings of the participants after the tests follow the same trend as the observation.

4.1 Limitations

The quality of the high school education might have compromised the control measure of using first year students to minimise the influence or effects of the education level of the participants. The task list given was based on online reviews which may have had a bias for the smartphone brand as a marketing technique, thus not presenting a true reflection of the latest functions and technology available on smartphones. Participants may also have deceived the researcher with regards to their previous experience with the smartphone.

4.2 Recommendations

Future research work into understanding user interactions with technology should consider looking at culture by gender interactions. While it is important to ascertain whether there is a difference between paper-based manual and soft copy it is also necessary to analyse whether the type of manual has an effect. With expert consultation offered in English for this study, it might be interesting to analyse whether there would be differences if this expert help is offered in the mother tongue of the participants. With increasing IT experience of the general population it would also be important to consider web-searching of information (google for help) as another possible strategy of learning. Mobile phone manufacturers might also consider designing devices that come with integrated self-help options (assistance systems), seeing that the trial and error strategy had the highest frequency as the first approach taken by participants in this study.

Another recommendation is to increase the sample population to increase variance and perhaps induce more pronounced cultural differences.

References


