Adopting the User's Perspective Regarding Knowledge on Solar Home Systems in Uganda

A. Tillmans[1] & P. Schweizer-Ries[2]

[1]*Technische Universität Berlin, Germany, 2University of Saarbrücken, Germany*

Introduction

Solar home systems (SHS) play an important role in attempts to fulfilling people's energy demands in off-grid areas. The SHS' life spans depend on proper sizing, installation and use. Hence, knowledge transfer to the local solar companies who carry out the sizing and installations, and to the users who have to handle their systems according to the usage instructions, is a crucial factor for success. The mental models approach provides principles for effective communication of information. To ensure optimal processing, new information should match the recipients' existing beliefs and misbelieves. That means stakeholders require relevant knowledge, and should be able to adopt the user's perspective in order to provide effective information communication. These two issues are the focus of this study.

Method

Five groups of key stakeholders in the Ugandan field of SHS were identified: users, local solar companies, NGOs, supervising organizations and manufacturers. 138 representatives of these groups responded to ten knowledge items on a five-option scale (true – maybe true – don't know – maybe false – false). The items were developed after on-site system checks, expert discussions and preliminary interviews. Users were asked to give their personal opinion about each item. In addition to their own opinion, the other stakeholders estimated the user's opinion.

Results

We expected manufacturers and solar companies to have better knowledge of technical facts than users. We also expected supervising organizations to have similar degrees of knowledge as manufacturers, since they are responsible for quality control. The linear contrast test of the mean answers shows three "knowledge groups" that differ significantly ($T=6{,}700$, $p<.0001$ (2-tailed)): manufacturers have the most profound knowledge about their products, supervising organizations and NGOs are on a medium level, and solar companies and users seem to have the least knowledge. We found that stakeholders with small psychological distance from the users of SHS were able to predict the users' knowledge better than stakeholders with greater psychological distance. The mean correlation between the solar companies' estimations and the actual users' responses to the items is $r=.425$. Between NGOs and users it is $r=.371$. Supervising organizations and manufacturers seem to be less able to predict the users' responses ($r=.093$ and $r=.162$). The difference between solar companies and supervising organizations is significant ($p<.05$), other differences reveal trends.

Discussion

Solar companies and NGOs possess the basic requirement to adjust their explanations to the users' mental models, but they seem to be lacking relevant knowledge themselves. The prevalence of misbelieves among solar companies is alarming! The supervising organizations develop most of the information materials for solar companies, NGOs and users, but they are the ones who are least able to anticipate the users' mental models, thus limiting effective knowledge transfer.

References

Morgan, M.G., Fischhoff, B., Bostrom, A. & Atman, C.J. (2002). *Risk communication: a mental models approach.* Cambridge: University Press.

Schweizer-Ries, P. (2004). Nutzung von Solarstromanlagen. Ein umweltpsychologisches Thema. *Magdeburger Wissenschaftsjournal, 1*(9), 27 – 34.

Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects on representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology*, 17(2),83-95