

Final Report

Project reference: 4
Authors: Michael Siegrist, Timothy C. Earle & Heinz Gutscher
Project title: **Electromagnetic fields – perceived risks, social trust and confidence**

1. Research activities performed, milestones and deliverables accomplished

Trust is an important factor in risk management. It affects judgments of risk and benefit, and, directly or indirectly, it affects acceptance of technologies and other forms of cooperation. There is little agreement among researchers, however, as to how trust in risk management should be studied. Many researchers seem to be atheoretical with regard to trust.

Based on a comprehensive review of the trust literature we propose a "dual-mode model of social trust and confidence." Trust and confidence are separate, but, under some circumstances, interacting sources of cooperation. Trust is based on value similarity, and confidence is based on performance. According to our model, judged value similarity between the observer's currently salient values and the values attributed to others determines social trust. Thus, the basis for trust is the belief that the person to be trusted would act as the trusting person would. The interpretation of the other's performance influences confidence. Confidence can be based on formal record keeping, contracts, control systems or other indicators of past performance or constraints on future performance. This division of information, although central in psychological studies of impression formation, has been overlooked in most studies of trust and confidence in risk management contexts. We hypothesize that value-relevant—or morality—information tends to dominate performance-relevant information. By "dominate" we mean that, to an observer, morality information is more important and that it conditions the interpretation of performance information. For example, given positive morality information, negative performance is judged much less harshly than it would be if the morality information were negative. According to our model, both social trust and confidence have an impact on people's willingness to cooperate (e.g., accept antennas emitting electromagnetic fields in the neighborhood).

Our model was tested in the applied context of EMF risks. The perceived risks associated with electromagnetic fields (EMF) have received very little attention from risk researchers. We examined factors that influence acceptance of a mobile phone antenna in one's neighborhood. Most people do not possess detailed knowledge about EMF. One way people cope with this lack of knowledge is to rely on trust and confidence to simplify the problems they face.

According to the research plan, data were to be collected in a single survey. In order to guarantee a high response rate and good data quality, however, data were collected in two surveys. In the first survey, we collected data for testing the "dual-mode model of social trust and confidence." In the second survey, perceived risks and perceived benefits associated with different sources of EMF were assessed. In addition, trust in authorities responsible for regulating these technologies was measured. Attitudes towards risks associated with mobile phones and attitudes towards the regulation of those risks were assessed as well.

2. Findings

Data from a random sample of 1313 Swiss citizens were collected. The telephone survey yielded a response rate of 42%. Structural equation modeling procedures were used to test the plausibility of the postulated dual-mode model of social trust and confidence. Results indicated that the proposed model fit the data very well.

Results of the present study support the proposed dual-mode model of cooperation based on social trust and confidence. The model and the path coefficients are shown in the Figure depicted below. In the applied context of EMF risks, both trust and confidence had an impact on cooperation. The model explained 41% of the variance of the latent variable cooperation. These results suggest, therefore, that mobile phone companies should focus on measures that build trust in order to increase acceptance of mobile phone base stations.

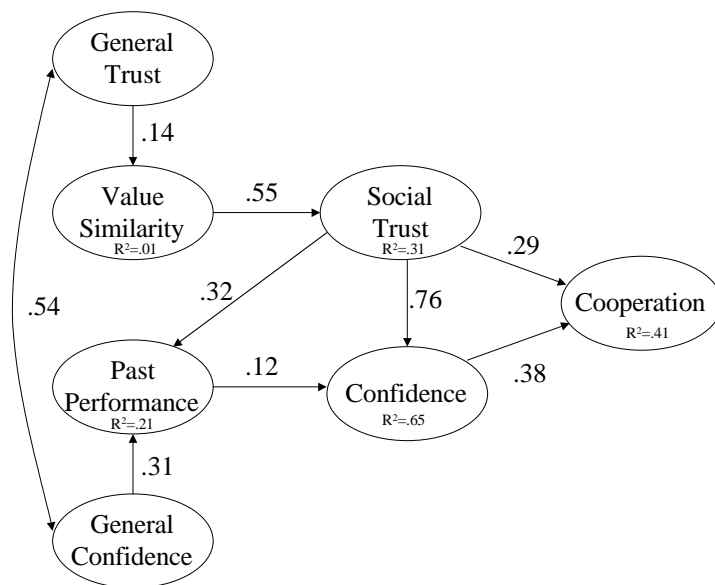


Figure: Dual-mode model of trust and confidence. Values represent standardized estimates (N=1313). All coefficients are significant ($p < 0.01$).

The review of the trust and risk management literature showed that most studies focused either on trust, on confidence, or on a blend of the two concepts. With few exceptions researchers did not attempt to measure both concepts, and, to our knowledge, there exist no risk management studies that examine how the two mechanisms designed for reducing uncertainty influence each other. The model described and tested in the present research could serve as a framework to guide future work in the domain of trust and risk management. The advantages of a common framework would include more theory-based research; and, as a result of the use of a common language, progress in the field would be more likely. Additional goals of future work should be to identify those situations in which trust is important and to assess how important trust is compared with other factors that influence risk acceptance and other forms of cooperation.

Research guided by the dual-mode model of social trust and confidence could be used to determine whether a company is faced with a trust or with a confidence problem. Based on the results of surveys, for example, appropriate measures could be developed for enhancing confidence or social trust, respectively. Companies would not waste resources on information campaigns that cannot provide the desired results, and the public would not be faced with even more uncertainty due to bad communication strategies that fail to address their concerns.

3. Publications

Siegrist, M., Earle, T. C., & Gutscher, H. (in press). Test of a trust and confidence model in the applied context of electromagnetic field (EMF) risks. *Risk Analysis*.

Siegrist, M., Earle T.C., & Gutscher, H. (2002). Acceptance of electromagnetic fields produced by mobile phone antennas: The influence of Trust and confidence. *Society for Risk Analysis - Annual Meeting*, New Orleans.

Siegrist, M., Earle T.C., & Gutscher, H. (2002). Trust and confidence in the applied field of EMF. *6th Alpe Adria Conference of Psychology*, Rovereto, Italy.

Siegrist, M., Earle T.C., & Gutscher, H. (2002). Trust and confidence in the applied field of EMF. *12th SRA Europe Annual Meeting*, Berlin.

Earle, T. C., Siegrist, M., & Gutscher, H. (2001). The influence of trust and confidence on perceived risks and cooperation EMC Zurich Symposium (ed.). In *Electromagnetic Compatibility 2001, Supplement*, (pp. 183-184). Zurich: ETH - IKT.