

# A change management framework for macroergonomic field research

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## Abstract

With the proliferation of macroergonomic field research, it is time to carefully examine how such research should be managed and implemented. We argue that the importance of attending to high-quality *implementation* of field research is equal to that of methodological rigor. One way to systematically manage the implementation process is to adopt a change management framework, wherein the research project is conceptualized as an instance of organization-level change. Consequently, principles for successful organization-level change from the literature on change management can be used to guide successful field research implementation. This paper briefly reviews that literature, deriving 30 principles of successful change management, covering topics such as political awareness, assembling the change team, generating buy-in, and management support. For each principle, corresponding suggestions for macroergonomic field research practice are presented. We urge other researchers to further develop and adopt frameworks that guide the implementation of field research.

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## 1. Introduction

Since Hal Hendrick's 1980 report to the US Human Factors Society, there has been a tremendous proliferation of macroergonomic research (Hendrick, 2002). The resulting broader scope of ergonomic research has advanced large-scale, multi-level, multi-phase field research—research well suited to addressing complex, dynamic systems marked by an ongoing interplay of agents, levels, and organizational units (Karsh, 2006; Karsh and Brown, 2005).

How should this macroergonomic field research be designed and carried out? Various volumes and articles on macroergonomic research methods are available (e.g., Haims and Carayon, 1998; Hendrick and Kleiner, 2001, 2002; Stanton et al., 2005), and a number of traditions, such as participatory ergonomics (Noro and Imada, 1991), have been put forth in response to that question. Furthermore, several volumes have been written on the conduct of longitudinal field research in general (e.g., Huber and Van

de Ven, 1995), especially by qualitative fieldwork methodologists (e.g., Patton, 2002; Van Maanen, 1988). Although such publications provide excellent guidance for conducting high-quality macroergonomic field research, their focus is on study design, data collection and analytical methodology. While such content is indeed necessary for rigorous research, macroergonomic field research specifically, and organizational field research in general, require additional guidance.

What is lacking is guidance on the implementation and management of the full process of macroergonomic field research. Most methodology texts focus on the content of research in contrast to the research process itself. Although many are likely to discuss process issues such as gaining entrée into an organization (Neuman, 2000), being honest and open when conducting social research (Schutt, 2001), or involving participants throughout critical stages of the research investigation (Lincoln and Guba, 1985), these considerations are not central: they are usually discussed as a side note, and multiple process issues are rarely discussed together. In other words, one might learn how to design research, but not how to implement it. Just as a technology must be well designed *and* well implemented to achieve

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desired outcomes (Karsh, 2004; Karsh and Holden, 2006), so too must macroergonomic research be well designed and well implemented.

To facilitate well-implemented macroergonomic field research, an organizing framework can be used to make implementation decisions, to guide research activities, and, generally, to frame the mindset of the researcher and research team. One example of such a framework comes from the international tradition of action research (Reason and Bradbury, 2001), where a number of directions have been generated that may be useful for implementing high-quality, meaningful “real-world research.” Action research blends real-world interventions to address identified problems together with research aimed at studying the intervention and gathering generalizable, scientific knowledge; naturally, this requires a high level of collaboration between the researchers and real-world partners, such as employees within an organization (Israel et al., 1989; Koshy, 2005). Researchers and their real-world partners jointly diagnose and analyze the problem, plan on an intervention, then carry out and evaluate the intervention, with both parties seeking to learn from this process; all this occurs in cycles of feedback and adjustment (Cohen and Manion, 1994; Israel et al., 1989; Koshy, 2005; O’Leary, 2004).

This paper outlines another framework, which centers around the concept of change management. In contrast to action research, the change management framework was developed specifically to meet goals related to improving structured macroergonomic field research implementations, although it can be used by any field researcher working in any discipline or domain. This framework applies to not only intervention research but any kind of field research that requires a high-quality implementation process. (Note that this paper focuses on management of research and is not a discussion of macroergonomic methods, per se.) Additionally, the change management framework is made up of many principles and suggestions that are based on firm empirical and theoretical foundations. Considerations of analysis, planning, collaboration with participants, continuity and long-term learning are but some of the principles and suggestions that overlap between action research and our empirical-theoretical framework, although the framework does not stress those particular principles over any others. The goals and foundations mentioned above are described in more detail after a brief introduction of the framework.

### 1.1. *The change management framework*

The framework described here suggests that field research can be approached like any other organization-level change, and can therefore benefit from principles of organization-level change management. We claim this for two reasons. First, the conduct of field research itself can impact, or perturb, the host organization much like any other change project (e.g., organizational change; technology implementation; job redesign). Second, similar to any

other change project, if the research is to succeed, the people affected by the research must accept it and then participate in it. That is, the organization hosting the study must choose to adopt the research study and the employees involved must be willing to participate in the study. Both of these ideas are further explored below.

When researchers begin a study in an organization, they necessarily create perturbations in the system. This is most obvious in field experiments in which the researchers manipulate variables in the field, but happens even in observational field studies (e.g., natural field experiments) where no variables are intentionally manipulated. These perturbations occur because, among other reasons,

- management must provide resources, most often time,
- employees provide time for data collection often while still on the job, but sometimes on their own time,
- the presence of the researchers may alter employee behaviors,
- the study is publicized in formal and informal ways, some of which may be inaccurate, and
- the study itself may create expectations for changes based on the study results.

Because each of these events or actualities can create system disturbances, the act of conducting a macroergonomic field study is tantamount to an organization-level change. This proposal stands in stark contrast to the common, tacit view that, at least in the case of observational field research, the act of conducting the research has no bearing on the organization or study results.

In fact, the uncomfortable reality is that two field studies using the same study design or method (e.g., process mapping), with the same company, and addressing the same research questions could obtain different findings and reach different conclusions based solely on the implementation or management of the study. Consider if one research team met with each of the target employees and explained the study while the other team’s first contact with employees was during recruiting or recording. The former team followed good change management practices for raising awareness and securing buy-in whereas the latter team did not. As a result, the former team may have obtained better participation rates and more honest or fuller responses than the latter. As a consequence of these differences, findings would most likely differ. If researchers apply a deliberate and consistent approach to the implementation and management of their field studies and report the steps followed, it will help to reduce uncertainty over the quality of research findings.

The second reason to frame field research as an organization-level change is that, as is the case with any other change or innovation, the host organization must adopt the research study and the employees must be willing to participate in the research. As anyone who has conducted field research knows, participation rates and motivation toward a study can vary widely. In this way,

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