COMPUTER-BASED JOB SIMULATION: A COMPLEMENTARY APPROACH TO ORGANIZATIONAL RESEARCH

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ABSTRACT: This paper reviews current applications of computer-based job simulation procedures in the study of organizational phenomenon. It then presents a study in which a new approach to modeling employee turnover is examined in the context of a computer-based job simulation. The simulation technology allows the researcher to examine formally the relationships between critical organizational variables. It provides a realistic and engaging yet controllable flow of events to the participant, and represents a useful complementary approach to traditional organizational field studies.

This paper describes a computer-based experimental simulation used to test hypotheses concerning individuals’ power, opportunity, and propensity to turn over. This simulation is unusual because nearly all previous empirical work on turnover has been performed in a field setting. In addition to traditional advantages of the laboratory setting such as precision of measurement and control, this simulation complements earlier field work with computer-aided materials management and computerized data recording.

COMPUTER-BASED EXPERIMENTAL SIMULATION

The use of computer-aided experimentation and simulation is not new. The computer has been frequently used in administering a variety of laboratory studies, as a teaching device, and as a training tool. Combining these two functions—simulation tool and laboratory management tool—provides a promising and underutilized research approach to studying organizational processes. To gain insight into the applicability of computers and simulations, we undertake a representative review of...
the literature. Table 1 shows a sample of recent computer and simulation applications. While these lists are not exhaustive, they represent a broad use of computer and simulation technologies applied across many areas of application.

Psychologists, for example, find the computer to be a useful tool in the laboratory both for administering materials and collecting data (e.g., Pratkanis & Greenwald, 1984). Studies of learning, memory, and cognitive processes benefit from the computer as a laboratory management tool. Timing materials presentation and measuring response times in a precise and unobtrusive manner also provide critical assistance in these studies. Because of the nature of the studies, however, researchers rarely utilize simulation formats.

A second way the computer has been used in the laboratory is to administer task-oriented and decision making materials. In these studies, the computer not only presents materials and records data, but also serves as an interactive base of the study. In one study, for example, subjects played a computer-based lunar landing game as part of the experimental session (Phillips & Lord, 1980). In another, subjects interacted via computer to solve the commons dilemma (Messick, Wilke, Brewer, Kramer, Zemke, & Lui, 1983). In studies like these, the computer acts as a simulation tool (at least in some simple way a real-world phenomenon is being modeled) as well as an administrative one. Unlike the learning and cognition studies, the computer simulates some real-world phenomenon rather than primarily managing materials and data.

In most cases, however, laboratory simulations do not accurately reflect a natural flow of experiences one would encounter in a real-world setting. They generally repeat trials of a simulated task (e.g., a lunar landing task or a performance evaluation). While these simulated tasks contain a more realistic flavor than that found in many learning and memory studies, researchers do not generally attempt to realistically represent a real-world phenomenon in a controlled setting.

Outside the psychology laboratory, we find many examples of realistic computer simulations. In the military, for example, battle simulators and flight simulators provide realistic representation of what might otherwise be prohibitively costly or dangerous settings. Typically, however, these tools serve as training devices rather than providing a formal laboratory experiment.

Similarly, business schools and assessment centers utilize computer-based management simulations for training and testing managerial aptitude and abilities. As is the case of the military simulations, however, these tools are infrequently used in a formal, controlled, experimental setting.