Graduate Business Students as Surrogates for Executives in The Evaluation of Technology

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It is difficult to do rigorous empirical testing of new technologies for executives. They are highly paid, busy people with little motivation to evaluate unproven software. Many studies have shown that undergraduates are poor surrogates for executives and managers, but the evidence is not clear one way or the other about business graduate students. It may be that social differences (age group, role, status, authority, accumulated wealth, income, etc.) among graduate business students would cause them to evaluate new technologies very differently. On the other hand, it may be that as future executives, business graduate students are a self selected group who can adequately generalize to executives when evaluating technology. This paper describes a study which attempts to shed light on this issue by comparing the reactions of graduate business students and working executives to an electronic meeting system. The study reveals no significant differences in technology evaluation between the graduate business students and senior executives. The presumed social differences between graduate business students and executives did not cause them to evaluate the technologies differently. The study suggests that one can get a conservative estimate of the reactions of executives to new technology by testing it with graduate business students.

There have been many technological improvements since the phenomenon of computer use by executives was first discussed by Rockart and Treacy (1982) in the Harvard Business Review. From those early attempts a growing number of top executives have come to rely on software that focuses, compresses, organizes, and delivers information in a format appropriate to strategic management functions. Even more than other levels of management, executives deal with a complex, uncertain, and unstructured world, and their decisions can have a significant impact on the entire organization. Creating new technologies to support senior executives is at the cutting edge of MIS research.

The best way to test an information technology (IT) designed to support executives is to have executives use the system. However, executives are not readily available as subjects for research projects. They are typically very busy, highly-paid people who have no interest in spending hours in a laboratory trying out unproven technologies under controlled conditions. Thus, researchers frequently resort to testing new executive IT with student subjects.

The use of students as surrogates for executives, or managers in general, has raised a controversy in social science research literature over the past decades (Remus, 1989; Copeland, Francia, and Strawser, 1973; Weick, 1967). Some authors have questioned the external validity of studies conducted with student subjects (Gordon, Slade, and Schmitt, 1986; Hughes & Gibson, 1991; Robinson, Huefner, & Hunt, 1991). They argue that social differences such as age, income,
gender, education, and experience, make students a poor choice as surrogates for executives, managers, or professionals (Copeland, et al., 1973; Oaks, 1972). These social differences may be even more important in considering a social technology like electronic mail, electronic meeting systems (EMS), or group support systems (GSS).

The purpose of the study described in this paper was to compare the technology evaluations of graduate business students to the technology evaluations of senior executives for a cutting edge information technology which supports executive activities. Evaluating information technologies is a difficult task at best, because even groups with identical social/demographic backgrounds can respond differently to a given technology depending on whether or not they use the technology in the way the designers intended (Poole and DeSanctis, 1989). Does using students as surrogates for executives further clutter an already complex issue?

**Previous Research**

Gordon, Slade, and Schmitt (1986) reviewed 32 studies which used both student and non-student subjects, and found that in 22 of these studies (73%), significant differences occurred between student (undergraduate and graduate) and non-student subjects (corporate recruiters, managers, bank supervisors, etc.). Of the remaining studies, three had low statistical power, and six others were qualitative rather than quantitative. The authors argued that in most of the studies they evaluated, the experimental task was replete with social content, and therefore likely to be perceived differently by subjects with social backgrounds as diverse as students and business people.

Not all students are created equal, however. While undergraduates have clearly been shown to differ from business people under a variety of experimental conditions (Copeland, et al., 1973; Berkowitz, et al., 1982), the same may not be true for graduate business students. Five of the studies examined by Gordon, Slade, and Schmitt used MBA students as subjects. The results of these studies did not demonstrate a clear difference between managers and graduate business students, rather they suggested that further investigation into this method was warranted:

Although none of the studies reported important between-group differences, factors other than student status may have been responsible for the communality in experimental results...

... Hence, this set of studies is inconclusive with regard to the effect of type of student in promoting generalizability and more research on this issue is obviously required (emphasis added).

Remus (1986) found evidence suggesting that graduate business students might be good surrogates for managers in some decision-making tasks. He conducted an experiment comparing the decision-making quality of MBA students with no managerial experience to MBA students with managerial experience. He concluded that MBA students with no managerial experience could be safely used as surrogates for managers in production scheduling tasks like the one used in his experiment. In a subsequent study Remus (1989) did uncover significant differences between undergraduate and graduate subjects.

While there is some indication that graduate business students may be good surrogates for business people under some circumstances, the evidence is not clear. It is an open question as to whether graduate business students would be good surrogates for executives when evaluating new technologies. Managers at different levels of an organization may have different, even competing values. Yet Remus did not compare graduate students to executives, rather, he compared inexperienced graduate students to graduate students with line management experience. He specifically excluded subjects with upper level management experience. The social differences between graduate students and executives may be much more extreme than the social differences between MBA students with and without line management experience.

Differences between students and executives may also occur because student subjects often have little stake in the outcome of an experiment, while executives who use an IT in a business may have a substantial stake in the outcomes of the tasks they do. Having a stake in the outcome of a task may affect the attitude of the subject towards the task, and the technology they use to support it. Gordon, Slade, and Schmitt argue that differences in familiarity with the experimental task are likely to cause differences by subject type in experimental outcome.

However, neither the studies examined by Gordon, et al., nor the Remus study involved evaluating new information technologies for either managers or senior executives. Nor did the subjects of the Remus study have a stake in the outcomes. Also, both groups of subjects in the Remus study were equally naive about the tasks.

On the other hand, if MBA students perceive themselves as headed for top management, it may well be that they are a self-selected group that already has the set of attitudes and values widely held by senior executives. It might be reasonable to regard them as the same population as senior executives, but in an earlier stage of development. If this is in fact the case, then the social differences between MBAs and senior executives (such as age and income) may not turn out to have a significant impact on their evaluations of new technologies. Given the need to test new information technology for executives, the unavailability of senior executives as subjects, and the possibility that graduate business students might be good surrogates for this task, we conducted this study.

If social differences in subject groups do cause differences in the way they evaluate new technologies, these differ-