

경영정보 시스템에서 소프트웨어의 무단 복제에 관한 비교연구

- MIS 교수와 경영자를 중심으로 -

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A Comparative Study of Unauthorized Software Copying: Information Systems Faculty Members' VS. Practicing Managers' Perceptions

The topic of microcomputer software ethics in the field of information systems (IS) has gained an increasing amount of attention from IS researchers and practicing managers. This paper compares the attitudes of IS faculty members with those of IS managers toward microcomputer software pirating. This study also examines professional related ethical attitudes in detail.

I. Introduction

Business ethics has become one of the "hottest" topics both among business academics and practitioners. The recent stories of insider trading on Wall Street and indictments of government officials/defense contractors all have received considerable attention from the public. Computer ethics is no

exception in this regard. Unauthorized use of information technology has become part of the interest in computer ethics.

During the past decades, numerous topics have been researched in the area of information systems (IS).

Among these, the topic of computer software ethics in the field of IS has gained an increasing amount of atten-

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tion from IS researchers and practicing managers. Today, computer software ethics is now emerging as one of the most critical research issues in the field of information technology. A recent study (Couger, 1989) confirms that the interest in computer software ethics is increasing significantly.

One reason for the interest in this topic has been the virtual explosion in the use of microcomputers during the last decade.

The rapid spread of hardware has been accompanied by a proliferation of software. While this has expanded the capabilities of the microcomputer, there have been some rather serious side effects. Perhaps the most serious of these is the practice of "illegal" copying of software. Two recent studies (DiNacci, 1985) (Simkin, 1987) indicated the magnitude of this problem. For instance, DiNacci (1985) pointed out that every other copy of business software used today is an unauthorized copy.

In terms of financial loss, the Association of Data Processing Service Organizations estimated that software piracy cost the industry over \$800 million (Simkin, 1987).

Virtually all discussions of business ethics, including computer ethics, center around the business practitioner.

After all, this is the individual who is involved daily in decisions that affect millions of dollars and often millions of lives. Moreover, the American public's opinion of the ethics of business executives has never been very high (Litzinger and Schaefer, 1987). For instance, a 1985 *Gallup Report* showed that only 23% of the respondents rated business executives as having "very high" or "high" ethical standards: out of 25 occupations, business executives ranked 14th in terms of ethics (note that college professors ranked 5th). Similarly, a 1985 *New York Times/CBS News Poll* indicated that 55% of the respondents felt executives were not honest (Clymer, 1985).

Yet microcomputer usage is not limited to the business world. Several surveys (Frاند, McLean and Britt, 1988; Lee and Shim, 1984; Render and Stair, 1987) confirm that the use of and interest in microcomputers in academia has increased exponentially over the last decade.

Therefore, numerous opportunities for unauthorized software copying should present themselves to IS faculty as well as to IS managers. But, as pointed out earlier, the ethics of college professors generally are seen as superior to those of business executives (Gallup Opinion Index, 1985). Whether

* PERCEPTIONS

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reality matches this perception is an open question. The primary purpose of this paper is to present the results of a survey of IS professionals' attitudes toward microcomputer software pirating. Second, it compares professionally related ethical attitudes of IS faculty members with those of IS managers.

Specifically, these questions are investigated: 1) Do IS managers perceive their coworkers to more frequently pirate software than IS faculty perceive their colleagues to do so? 2) Do IS managers admit to personally pirating software more often than IS faculty admit to this? 3) How prevalent a problem is unauthorized software copying in business and academia?

II. Hypotheses

Information Systems faculty members work in an unsupervised environment.

At all levels of an organization, IS managers experience a greater degree of control and supervision than do IS faculty members. Thus, the risk of being discovered while making unauthorized software copies is greater in the business office than in the faculty office. This greater chance of discovery should create a strong need in IS managers to keep such activities secret. However, this argument suggests the need to keep such activities from being discovered, but not necessarily the need to completely refrain from such acts. Based on the differ-

ences in the degree of supervision found in academics as opposed to the business setting, the first hypothesis is developed:

Hypothesis 1: IS managers perceive less unauthorized software copying among their coworkers than IS faculty members perceive among their colleagues.

The following three hypotheses rely on the fact that individuals tend to make ethical decisions within the context of their own personal values (14). This is especially true in regards to computer related issues. The computer industry failed to develop an essential ethical base before its technology moved into the public domain (BloomBecker, 1987). Consequently, there is no ethical framework within which end users can make decisions as to what are proper and improper behaviors. Business managers generally make decisions from a utilitarian perspective (Fritzsche and Becker, 1984). That is, they tend to act in ways that will lead to the greatest good for the greatest number, i.e. the organization. Therefore, it is hypothesized that:

Hypothesis 2: IS managers admit to personally copying software more often than do IS faculty members.

Hypothesis 3: IS managers consider it less unethical to copy software to be used on the job than do IS faculty members.

Hypothesis 4: *When compared with IS faculty members, IS managers are less likely to consider pirating software to be as unethical as using office supplies for personal use.*

III. Methodology

1. Sample

Two respondent groups are examined in this study. The academic participants consisted of 111 members of *Decision Sciences Institute* (of 351 members whose primary interest area is IS). The IS managers consisted of 99 members of *The Institute of Management Science* (of 263 nonacademic members whose primary interest area is IS).

Respondents were solicited by mail in 1988 asking their participation in research inquiring about "ethical issues related to microcomputer software usage." Participants were promised anonymity.

2. Research Instrument

Each group received a one-page questionnaire. Although this questionnaire differed somewhat between the academic group and the practitioner group, the general format was the same. The questionnaire consisted of three (3) parts. The first part asked about the frequency with which the respon-

dent used microcomputers in his/her work; possible responses could range from "Never" to "Very often" (Likert-scale items with 5-point response scales).

The second part inquired about the frequency with which the respondent and his/her colleagues copied software that was neither *in the public domain* nor *site licensed*; again responses could vary from "Never" to "Very often." Respondents also were asked to indicate their (dis)agreement with statements asking about the ethicalness of unauthorized software copying for various work purposes. Each of these statements contained 5-point Likert response scales ranging from "Strongly disagree" to "Strongly agree."

The last part of the questionnaire solicited respondent demographics:

managerial/academic rank, sex, existence of an organizational policy on software use, and so forth.

IV. Results

1. General Findings

Table 1 contains a summary of the demographic characteristics of the two groups. In regards to the IS faculty members group, respondents came from all levels of the professorial hierarchy, with almost 60% being associate professor and full professor. Also, the respondents were predominantly male (see Figure 1).

About 92% of academic respondents

Table 1. IS Professionals' Sample Demographics

Variable	IS Faculty Members (n=111)	IS Managers (n=99)
1) Purchase A PC:	Yes = 102 (92%) No = 9 (8%)	Yes = 90 (91%) No = 9 (9%)
2) Use a PC to assist in*:	Teaching = 4, 35 Research = 4, 27 Consulting = 3, 51	Work = 4, 46
3) Academic rank/ Management position	Instructor = 21 (18, 9%) Asst. prof. = 24 (21, 6%) Asso. prof. = 33 (29, 7%) Full prof. = 33 (29, 7%)	Lower mgt. = 21 (21, 2%) Middle mgt. = 42 (42, 4%) Top mgt. = 18 (18, 2%) N/A = 18 (18, 2%)
4) Sex	Male = 90 (81, 1%) Female = 21 (18, 9%)	Male = 84 (84, 8%) Female = 15 (15, 2%)
5) Formal "Policy statement" on Software use	Yes = 66 (59, 5%) No = 30 (27, 0%) Not sure = 15 (13, 5%)	Yes = 78 (78, 8%) No = 18 (18, 2%) Not sure = 3 (3, 0%)
6) Understand U. S. Copyright law	Yes = 75 (67, 5%) No = 30 (27, 0%) Not sure = 6 (5, 5%)	Yes = 78 (78, 8%) No = 18 (18, 2%) Not sure = 3 (3, 0%)

*On a scale of 5 (Very often) to 1 (Never).

indicated they had purchased a micro-computer. Also, a large portion of the respondents are using microcomputers for the purposes of teaching (95%), research (89%), and consulting (84%). The results also indicated that about 73% of the respondents admitted "illegally" copying software that is neither *site licensed* nor *in the public domain*. Ironically, respondents believe that it is unethical to copy copyrighted software for teaching (76%), research (83%), and consulting purposes (92%), even though they copy *copyrighted*

software, (see Figure 1)

The study also revealed several other interesting phenomena. First, about 27% of the academic respondents do not understand/know the U. S. Copyright law. Second, male faculty members copy unauthorized software more than females do. Third, junior faculty members deal with unauthorized copying more than senior professors.

This study suggests that unauthorized software copying will become even more widespread. Perhaps the best indication that pirating software will

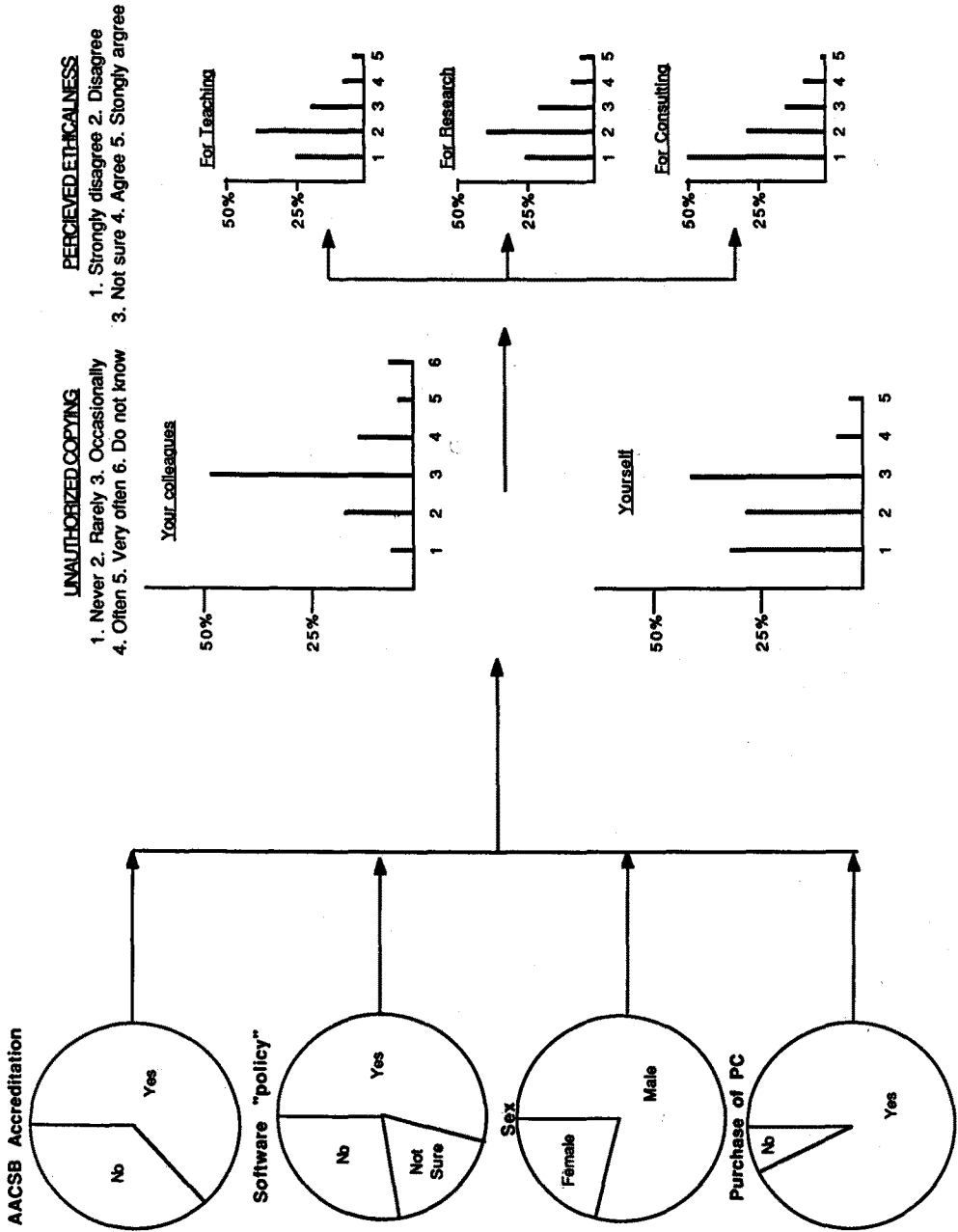


Figure 1. IS Faculty Members' Perceptions of Unauthorized Software Copying

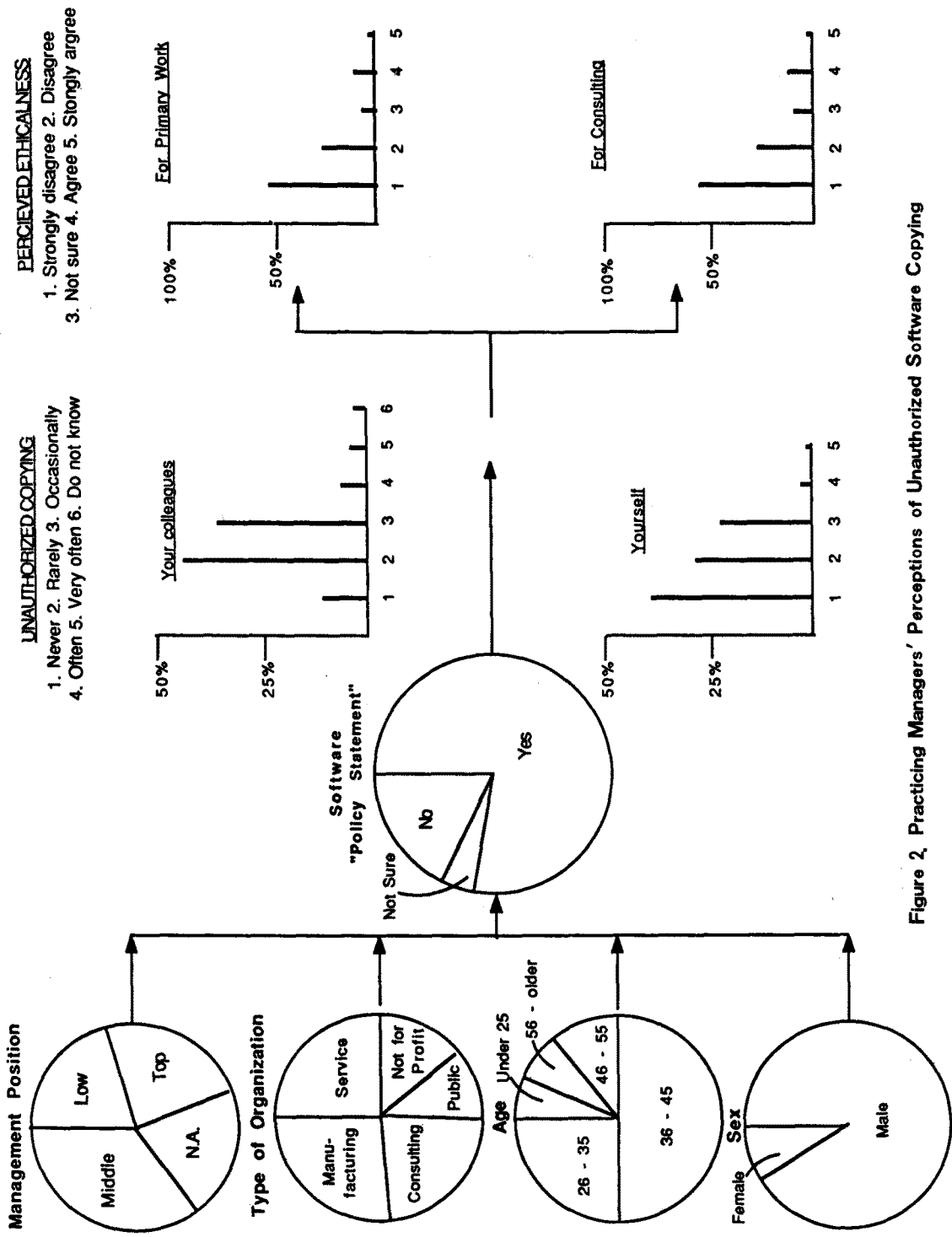


Figure 2. Practicing Managers' Perceptions of Unauthorized Software Copying

best indication that pirating software will continue comes from a respondent to this survey. When asked if copying a \$300 software package is as unethical as stealing \$300 worth of office supplies, the respondent wrote that the unethical act was charging \$300 for the software package.

The IS *practicing managers* group had similar characteristics. Respondents came from all levels of management. Here, too, the group consisted of considerably more men than women (see Figure 2).

The survey revealed that about 91% of the respondents have purchased microcomputer, an indication of IS managers' heavy reliance on microcomputers (91% of the respondents use microcomputers at least "occasionally" in assisting and/or completing their work). As far as frequency of unauthorized software copying is concerned, illegal copying is not a significant problem. About 9% of the IS managers stated that they have copied copyrighted software "Often" or "Very often". The remaining (91%) indicated that they have "Never", "Rarely" or "Occasionally" copied software. Interestingly enough, the results indicated that about 9 percent of the managers believe their colleagues have copied software "Often" or "Very often".

Those responding to this survey rejected each of the rationalizations offered for pirating software. For example, about 88 percent of the respondents believe that it is unethical to copy software to be used on the

job. Attitudes and perceptions were more strongly against software pirating for consulting purposes; 67% of the respondents "Strongly disagreed" and 27% "Disagreed" that it is ethical to copy for this purpose. It is significant that these attitudes were rather consistent across type of organization, level of management, professional work area, and respondent demographic characteristics. In fact, the only difference was in regards to "colleagues' copying activities".

When asked if copying a \$300 copyrighted software is as *unethical* as stealing \$300 worth of office supplies for personal use, IS managers responded very differently than did IS academics. Seventy-two percent of the business respondents either "Agreed" or "Strongly agreed". The following quotes from two of the respondents revealed common attitudes/perceptions held by numerous practicing managers who seemed to have no interest in pirating software:

"Software vendors charge a lot but still is *not ethical* to copy copyrighted software"

"Intended use of the software is important. Few will pay \$300 to preview or sparingly use a piece of software. However, documentation and upgrades are *essential* if software is used professionally"

The study also revealed several other similar interesting facts. First, par-

ticipants in this study seemed not to have a full grasp of the U. S. copyright law. About 18 percent of the respondents said they do not understand this law. Second, about 43 percent of the sample respondents have been with their present organizations "up to 5" years. This statistic reflects the high turnover rate of computer-related professionals, even though 73 percent of respondents have more than 10 years' working experience. The finding of this study may well confirm the previous study (Ginzberg and Baroudi, 1988) that the trend in turnover has increased signifi-

cantly.

2. Test of Hypotheses

Table 2 shows the results of the tests of the four research hypotheses; Student's *t* was used to test each. In regards to hypothesis 1 (H1), there was a marked difference between the two groups in terms of attitudes/perceptions toward unauthorized software copying.

For example, the mean IS faculty response to the item asking about the frequency with which colleagues copy was 3.70. IS managers, on the other

Table 2. Tests of Hypothesized Relationships

Variable (Hypothesis)	IS Faculty Members (n=111) X (S, D.)	IS Managers (n=99) X (S, D.)	Results of t-tests (d, f)
Frequency ^a with which colleagues copy (H1)	3.70 (1.41)	2.36 (0.96)	4.58** (68)
Frequency ^a with which respondent copies (H2)	2.35 (1.16)	2.03 (1.05)	1.21 (68)
Ethical to copy software used on the job (H3)	1.92 (1.16)	1.73 (1.23)	0.67 (68)
As unethical to copy software as to steal office supplies ^b (H4)	3.54 (1.43)	3.69 (1.40)	0.43 (67)

a(1=Never; 2=Rarely; 3=Occasionally; 4=Often; 5=Very often)

b(1=Strongly disagree; 2=Disagree; 3=Not sure; 4=Agree; 5=Strongly agree)

**p<.001

hand, averaged 2.36 on this item. The difference between these responses was statistically significant ($t = 4.58$, $p \leq .001$, $d.f = 68$). Thus, the hypothesis 1 was supported.

The second hypothesis (H2) was not empirically supported. Although IS managers reported greater use of computers on their jobs than did IS faculty respondents ($\bar{X}_{\text{managers}} = 4.46$, $\bar{X}_{\text{faculty}} = 4.04$), the academicians reported they personally made unauthorized software copies more frequently than did the business respondents. On the same 5-point scale described above, the mean IS faculty response was 2.35 with the corresponding manager response being 2.03. The difference was statistically insignificant ($t = 1.21$, $n.s$, $d.f = 68$). These results are contrary to the hypothesized directionality of this hypothesis.

Similarly, hypothesis 3 (H3) could not be substantiated by these results. To test this hypothesis, the IS managers' mean response to this issue was compared to mean IS faculty response about the ethicalness of copying software to be used on the job. (For the IS faculty group, this score was the arithmetic mean of their responses to individual items asking about the ethicalness of copying software for teaching, research, and consulting purposes.) Comparison of this overall mean to the IS managers' overall mean produced statistically insignificant results ($\bar{X}_{\text{faculty}} = 1.92$, $\bar{X}_{\text{managers}} = 1.73$, $t = -0.67$, $n.s$, $d.f = 68$).

Finally, IS faculty members were

hypothesized (H4) to be more likely to consider software copying as unethical as expropriating office supplies for personal use, than were the IS managers. This relationship also failed to be supported. When asked if copying was as unethical as using supplies in this manner, IS faculty respondents produced a mean score of 3.54 (where 5 = "strongly agree"); the mean IS managers' response was 3.69 on the same scale. This difference is statistically insignificant ($t = -0.43$, $n.s$, $d.f = 67$). Note that both groups expressed considerable agreement with this statement.

V. Discussion

These results are somewhat at odds with the perception that software pirating is a widespread problem of million-dollar implications. One reason for this divergence may be the types of software copied. The IS managers' respondents reported extensive use of microcomputers on the job. They primarily use business related packages, at least while at work. Perhaps, then, nonbusiness related software (e.g., games and the like) are copied more frequently than are work related packages. Since this kind of recreational software will rarely be seen in the business office, respondents in this study may see little copying activity. Similarly, they may see little justification for this kind of copying.

Another reason for the anti-copying

attitude throughout the IS manager group may be that respondents were asked specifically about work related issues. Since the organization usually supplies the kinds of software packages needed on the job, there may be little need for copying.

This cost related argument also may explain more prevalent copying among IS faculty members. In this age of tight educational budgets, there may be fewer dollars available with which software can be purchased. Thus, IS faculty members may perceive a need to copy the software packages' of others.

Furthermore, the degree of supervision experienced by those working in organizations versus those working in universities and colleges may influence copying activities. As conjectured earlier, such acts may be inhibited by the presence and/or threat of the presence of a supervisor.

IS faculty members should have much less fear of this happening, given their relatively unsupervised work environment.

Finally, the identification of faculty with their profession rather than their employer could have affected these results. Professional employees such as college faculty usually define success in terms of personal achievement rather than by rewards from the employing organization (Tosi, Rizzo and

Carroll, 1986). Perhaps faculty copy software packages that will aid in research and publishing endeavors. Hence, the ends may justify the means. These results are both discouraging and encouraging. The discouraging aspect is that IS faculty seem to have a relatively unconcerned attitude about software copying. It seems likely that in one way or another this attitude will be passed along to students. A very real question, then, is "Can faculty produce ethical future business leaders without themselves acting ethically?" Obviously the ethics of a IS manager will not be totally shaped by his or her professors. But the attitudes toward ethical issues will be colored, at least to a degree, by the actions of these role models.

Obviously there are limitations to this study. For example, there is no common definition of "unauthorized" software copying.

Here it was defined as copying software that is neither *site licensed* nor *in the public domain*. But would pirating an already pirated copy be considered an ethical transgression? Also, these results basically are responses to single item measures. More developed measures clearly are needed. These are issues that must be addressed in future computer software ethics studies.

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