Measuring Ethical Reasoning of IT Professionals and Students

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INTRODUCTION

Information technology (IT) professionals are entrusted with the design, implementation, and operation of the information systems that support key business processes within organizations. Many organizational stakeholders such as management, investors, and regulators expect these professionals to act ethically, as these systems must accurately reflect all business activity. This expectation has been particularly heightened in the early 2000s due to the substantial business scandals in the United States, Europe, and elsewhere. For example, in 2001 fraudulent financial practices by the now defunct U.S. energy trading company, Enron, rocked the financial markets so hard that the Congress of the United States enacted sweeping reforms in 2002 through the Sarbanes-Oxley Act (SOX, 2002). As McLean and Elkind (2004) observe, this law includes several provisions aimed at ensuring the integrity of information and business process support in organizational information systems. Concerns about unethical business activity are not endemic to the United States, as exemplified by the financial frauds unearthed at the Italian food distribution company, Parmalat, and the Dutch international supermarket company, Royal Ahold.

With increased reliance on IT professionals to support and record business process activity, companies must be able to expect ethical behavior by those they charge with this responsibility. However, it is not always clear how their ethical behavior can be measured. The purpose of this essay is to describe instruments to measure ethical reasoning of IT professionals. In particular, we describe a generally supported model in the literature (Rest, 1994) that posits that ethical reasoning is a key component of ethical behavior that can be measured, and which is also significantly correlated with ethical action (see Thoma, 1994, for a review).

BACKGROUND

As entry-level IT professionals, graduates of business schools often have taken a course in ethics as part of their management curriculum (Peppas & Diskin, 2001). It is otherwise rare for students preparing for IT careers to be exposed to ethics in their major's courses. And yet upon graduation, their employers expect them to design and use technology in an ethical manner in their personal and professional lives. Many of these students pass professional IT exams, gain experience, and join professional associations such as the Association for Computing Machinery (ACM) or the Institute of Electrical and Electronics Engineers (IEEE). As members, they are asked to adhere to the respective codes of conduct of their professional bodies (Anonymous, 1993; Gotterbarn, Miller, & Rogerson, 1999; Rogerson, Weckert, & Simpson, 2000). However, while adherence to these codes fulfills membership requirements, it does not necessarily ensure ethical reasoning or behavior by IT professionals (Oz, 1992; Harrington, 1996).

Should we just assume that IT professionals know how to act ethically? Can information system (IS) students be taught to make ethical decisions? These questions have puzzled researchers for many years, harking back to Mason's (1986) landmark article in which he identified privacy, ownership, access, and accuracy as the four main ethical issues of concern to IT professionals. Since then, many researchers have studied various aspects of ethical behavior by IT professionals and students (Grupe, 2003; Harrington, 1996; Kreie & Cronan, 2000), and several books now support the teaching of IT ethics in college (cf., Mason, Mason, & Culnan, 1995; Schultz, 2005; Spinello, 2002, 2004). In fact, since 2002 ethics has been included as an important analytical and critical reasoning capability

of the IS Model Curriculum and is listed as a topic in two of the courses (cf., Gorgone et al., 2003).

MAIN FOCUS OF ARTICLE

In order to measure the ethical reasoning of IT professionals and students, one can use ethics assessment tools. Before describing a specific instrument for assessing ethical reasoning, we describe the model of ethical behavior that it is designed to support. According to a widely accepted model (Rest, 1994), ethical behavior is dependent on four components:

1. **Moral Sensitivity:** The ability to interpret a moral situation and be able to sense its ethical undertone.
2. **Moral Reasoning:** The ability to judge actions as morally right or wrong.
3. **Moral Motivation:** The ability to prioritize moral values over other values.
4. **Moral Character:** Having the courage, persistence, and implementation skills to overcome distractions and to make the right moral decision.

The literature indicates that each of these four components is positively associated with ethical behavior, and that to ensure moral action, IT professionals must possess all four. Thus, there is a need for measures for each of these components of moral action. However, only the moral reasoning component has a well-developed theory and measurement scale. The theory is called Cognitive Developmental Theory of Ethics, developed by Lawrence Kohlberg (1981). The measurement instrument based on this theory is known as the Defining Issues Test (DIT), developed by James Rest (1986) of the University of Minnesota's Center for the Study of Ethical Development.

Kohlberg's theory has three levels of moral development with each level subdivided into two stages. Each of the six stages is 'higher' than previous stages of ethical development. The first level is called the Pre-Conventional level. It refers to the self-centered ethics of convenience. For example, the individual obeys rules to avoid punishment (Stage 1) or to gain personal rewards from others (Stage 2).

The second level is called the Conventional level, where the individual adheres to the ethics of confor-

mity. For example, the individual may exhibit group loyalty (Stage 3) or follow national law and order (Stage 4). The highest level in Kohlberg's theory is the Post-Conventional level, where the individual follows principle-based ethics of conviction. Written ethics of social contract and utilitarianism comprise Stage 5, while unwritten global principles of justice, duties, and human rights comprise Stage 6.

The six-stage theory just outlined requires a measurement system. Since the higher stages indicate higher-order ethical reasoning, it is most desirable to measure individual standings at the highest stages. The DIT is a popular and reliable instrument for this purpose. According to Rest (1986, p. 196), the DIT is based on the premise that people at different points of development interpret moral dilemmas differently, define the critical issues of the dilemmas differently, and have intuitions about what is right and fair in a situation. Differences in the way that dilemmas are defined therefore are taken as indications of their underlying tendencies to organize social experience. These underlying structures of meaning are not necessarily apparent to a subject as articulative rule systems or verbalized philosophies—rather, they may work 'behind the scenes' and may seem to be based on common sense or appear intuitively obvious.

The original full version of the DIT has six cases and 72 questions. It is a self-administered, multiple-choice questionnaire, where each case presents a moral dilemma and is accompanied by 12 questions that are designed to measure different schemes of fairness. Using a four-level scale (much importance, some, little, or none), the individual taking the DIT indicates the importance of each item in the resolution of the dilemma. The resulting summary measure is called the P-score, which reflects moral reasoning at Kohlberg's Post-Conventional level ethics of conviction. The measure falls between 1 and 99, where the higher the P-score, the higher the level of moral reasoning.

The DIT instrument has been used in thousands of studies of professionals worldwide where it has been shown to have widespread reliability. Rest (1994, p. 13) summarizes the results of many studies, and reports that the "test-retest correlation of the DIT (over a period of several weeks) averages in the .80s, and the internal reliability of the DIT also averages in the .80s (Chronbach's Alpha)." In addition, the DIT P-score has consistently shown positive and statistically significant correlations with moral behavior. For example, a review

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