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# What influences IT ethical behavior intentions—planned behavior, reasoned action, perceived importance, or individual characteristics?

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## Abstract

This study extends IT ethics research by proposing an IT ethical behavioral model that includes attitude, perceived importance, subjective norms, situational factors, and individual characteristics. The proposed model integrates elements from the Theory of Planned Behavior (TPB) and Theory of Reasoned Action (TRA) as well as ethical decision-making models. It is hypothesized that behavioral intention is influenced by an individual's attitude (which in turn is influenced by consequences of the action and the environment), obligation, and personal characteristics. The results of the study show that some factors are consistently significant in affecting attitude and behavioral intention. Other factors are significant only in certain scenarios. From the results, organizations may be able to develop realistic training programs for IT professionals and managers and incorporate deterrent and preventive measures that can curb the rising tide of undesired misuse.
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## 1. Introduction

In spite of its undoubted value, IT poses some risks and ethical issues, because its misuse has resulted in serious losses to business and society [37,59]. Busi-

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nesses suffer financial losses through outside attacks such as breaches of security and theft of proprietary information but insiders remain the most likely threat [60]. An estimate of US$ 265 billion dollars per year in losses to businesses is considered conservative [44]. Some risks, such as identify theft and inaccurate databases, also directly impact the individual.

From a social and professional perspective, most IT professionals are concerned about unacceptable, illegal, and unethical use of IT. Many recognize the potential harm to society and the IS profession [13]. There is also growing interest in research about

deterrents to illegal and unethical behavior and in determining what influences ethical decision-making [1,15,16,22,42,43,53,66]. The purpose of this paper was to extend the study of ethical behavior in the field of IT—to present an ethical behavioral model and test it.

## 1.1. Previous behavioral models—theory and research

In the past 30 years, a few general theoretical models of behavior have been proposed; perhaps the two best known are the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). The TRA was developed by Ajzen and Fishbein [5,6,21]; it proposed that one's intention to perform or not to perform an action (behavioral intention) is the immediate precursor to the actual behavior. The TRA model introduced two factors that affect behavioral intention: attitude toward the behavior and subjective norms. *Attitude* involves judgment whether the behavior is good or bad and whether the actor is in favor of or against performing it. *Subjective norm* is the perception of how one ought to behave. Ajzen [3,4] later extended the model and called it the TPB, which added perceived behavioral control as another factor influencing behavioral intention. *Perceived behavioral control* is the perception of how easy or difficult it would be to perform the behavior.

Both the TRA and TPB models have been the basis of numerous studies. Empirical research supported the proposed relationships in both [10,36,45,56]. They have contributed to research in ethical decision-making, though some researchers believe that the TPB is more useful in predicting unethical behavior in the context of IT [14,35].

### 1.1.1. Previous ethical behavior models

Prior to the TRA and TPB, Kohlberg and Rest contributed to theory and research into people's judgment of moral issues though their work did not deal with a person's behavior or behavioral intention. Kohlberg proposed a cognitive-developmental approach to moral judgment and said that moral judgment changes as an individual goes through different stages of development. Rest [46,48,49] developed a Defining Issues Test (DIT), which provided a more structured, operationalized instrument for Kohlberg's stages of moral judgment. The DIT examines whether a per-

son's judgment of a moral dilemma differs with the person's stage of moral development (its *P*-score reflects the level of a person's principled reasoning and its *D*-score reflects one's preference for principled reasoning over that from lower stages of moral development).

During the 1980s and 1990s additional models were introduced to explain ethical decision-making. Ferrell and Gresham [20] proposed an ethical decision-making model with several factors influencing an individual's decision and with this affecting the likelihood of ethical behavior (''decision'' corresponds to ''behavioral intention''). In the model four factors were postulated as influencing an individual's decision making: (1) individual characteristics (one's knowledge and values); (2) significant others (those who provide example behavior or exert influence); (3) opportunity (conditions, including rewards/punishments, professional codes, and corporate policy); and (4) the ethical issue or dilemma itself.

Along the lines of the opportunity factor, which includes corporate policy, Trevino [61] presented a model for explaining ethical behavior in the context of an organization. In addition to individual factors (ego strength, one's self-regulating ability resulting in more consistency between moral judgment and action; field dependence, the extent to which a person relies on others for guidance; and locus of control, the extent to which a person feels he or she has control over outcomes), he posited there are situational moderators that represent the influence of an organization (immediate job context, organizational culture, and characteristics of the work). His model also incorporates Kohlberg's stages of moral development. Trevino and others have reported empirical support for the impact of organizational culture on ethical decision-making [58,62].

Bommer et al. [12] presented a broader model of ethical decision-making that included several environmental factors as well as the work environment (corporate goals, stated policy, and corporate culture). However, their model included other environmental factors: one's personal environment (peer group and family), professional environment (codes of conduct, licensing requirements, and professional meetings), government/legal environment (legislation, administrative agencies, and judicial system), and social environment (religious values, humanistic values, cultural

values, and societal values). It also included individual attributes (moral level, personal goals, motivation mechanism, position/status, self concept, life experiences, personality, and demographics). This model was not empirically tested until the late 1990s.

In 1991, Jones [25] argued that an important aspect of ethical decision-making and behavior had been omitted in some previous models. Based on research such as Weber's [64], Jones said that the characteristics of the moral issue must influence moral judgment and intention to engage in behavior. He introduced a construct called "moral intensity" to refer to the characteristics of an ethical issue. To test Jones' issue-contingent model, Robin et al. [51] empirically developed a measure of "perceived importance of an ethical issue" (PIE). They found empirical support that PIE influences ethical judgment and behavioral intention.

### 1.1.2. IT ethical behavioral models

In the 1990s some ethical decision making models focused on explaining ethical/unethical behavior in the IT field. In 1991, Eining and Christensen [19] proposed a psycho-social ethical model to explain software piracy behavior. Their model incorporated computer attitudes, material consequences, norms (behavior others expect), socio-legal attitudes, and affective factors as independent variables. In line with the TRA and TPB, they suggested that these contribute to intentions, which in turn lead to behavior. Empirical results showed that all the variables except socio-legal attitude were significant in explaining the variation in software piracy behavior.

In 1998, Banerjee et al. [7] presented an IT ethical behavior intention model that incorporated much of the prior research. Their model integrated factors from the TPB (attitude and personal normative beliefs), Rest and Kohlberg (moral judgment), Trevino (ego strength and locus of control, organizational climate), and Bommer et al. (environmental and individual attributes). In an empirical test of the model, three variables were significant—personal normative beliefs, organizational climate, and an organization-scenario variable, which had been included as a control variable. Though many of the model's variables were not found to be statistically significant, the authors believed this could be due to the small sample size in their study.

Also in 1998, Kreie and Cronan [32] tested a model largely based on Bommer et al. The study used scenarios to examine a person's ethical decision making (judging whether a behavior described was ethical or unethical) and to examine what influenced a person's decision. The model included environmental variables, individual characteristics, moral obligation, awareness of consequences, and ethical scenario/issue. Significant indicators of whether a person's behavior was judged acceptable or not were: moral obligation, awareness of consequences, gender,[3] and the scenario/issue.

## 2. IT ethical behavioral model

Based on prior theory and research, a comprehensive model of ethical behavior of IT personnel was proposed (Fig. 1). This integrates attitude, ethical behavior, and moral development research. Operationally, the IT behavioral model views the behavior of IS personnel as affected by variables based on attitude, personal normative beliefs, moral judgment, and individual factors.

Unlike previous models, our study proposed a two-stage model to explain the components of intention to behave ethically or not. The extension of the ethical behavioral model in comparison to previous models is depicted by using dashed lines. The model hypothesized that intention is influenced by such factors as the decision maker's attitude toward the situation. Three moderating variables are shown, including the person's perception of the importance of the ethical issue. The second stage of the model showed how the person's attitude was influenced by factors from the decision maker's environment and their possible consequences.

## 3. Research model

The functional representation of the IT ethical behavioral model was expressed as:

$$B = f(\text{IBEU}) \tag{1}$$

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[3] Gender had been found significant in other IT ethics research, Banerjee et al. [8] and Loch and Conger, and other ethics research by Dawson [17] and Deshpande [18].
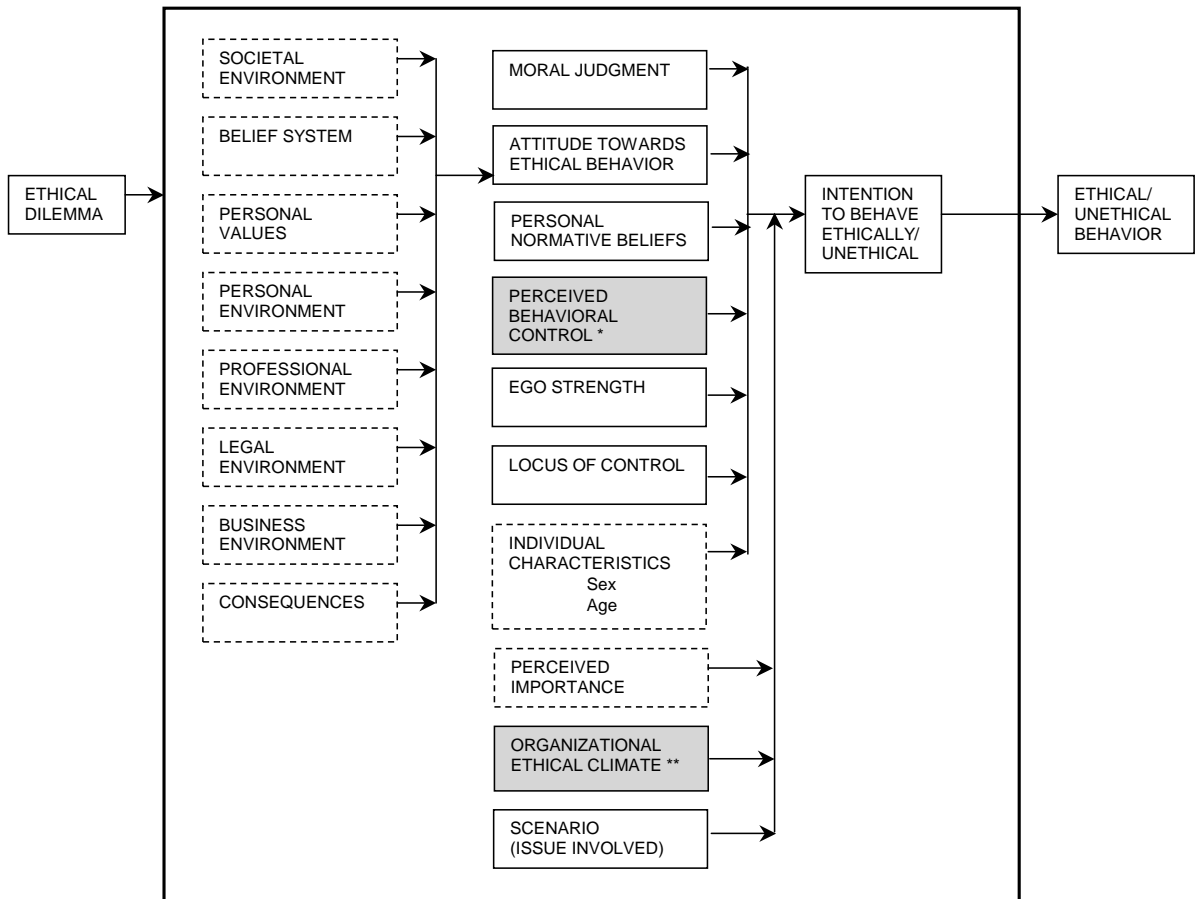
Fig. 1. Ethical Behavior of Information Systems Personnel.
(- - -) Extension of the ethical behavior model over previous research studies.
(∗) Not measured in the current study because behavioral control was not in question.
(∗∗) Held constant in the current study.

$$IBEU = f(MJ, ATT, PNB, ES, LOC, PI, SEX, \\ AGE, SCEN) \qquad (2)$$

$$ATT = f(SOC, BEL, PVAL, PE, PRF, LGL, \\ BUS, CON) \qquad (3)$$

where

*B*: Ethical/unethical behavior.

IBEU: Intention to behave ethically/unethically—an individual's intention to perform or not perform a specific behavior.

The study measured behavioral intention rather than actual behavior. This is in line with much research in the area of ethics in IT. One's intention is thought to capture the motivational factors that affect a behavior. Ajzen found behavior to be predicted from intention with considerable accuracy.

MJ: Moral judgment—the way an individual reasons when faced with a moral dilemma and where reasoning depends on the individual's current stage of moral development.

Kohlberg [26–31] identified three moral development levels. Each consisted of two stages. The three levels are: pre-conventional, conventional, and post-conventional. At the pre-conventional level a person is more likely to make judgments based on self-interest, and morality is not seen as inherently important. At the conventional level the person is likely to make judgments in accordance with the values of his or her group, the established

norms and laws of society, and the law. At the post-conventional level a person views morality as fundamental issues that are not limited by one's group or society [11]. Each person passes through one or more of these stages as they mature.

Though this moral development theory has been criticized for the sequence and moral stages identified [50,57,65], it has been the basis of much research and has been empirically validated across cultures, across countries, and in longitudinal studies. Rest contributed greatly to this research by developing the DIT to assess the stage of moral development. This is an objective measure of moral reasoning development. Several indices reflecting moral judgment are computed with DIT: *P*-score, *D*-score, and *U*-score. The *P*-score is an individual's stand with respect to principled morality. The *D*-score is an individual's rating of specific questions with regard to their importance in defining the situation in the context of a particular dilemma. The *U*-score is the degree of which moral judgments operate in determining a decision on a particular ethical dilemma.

ATT: Attitude toward ethical behavior—an individual's degree of favorable or unfavorable evaluation of a behavior.

Considerable research based on the TRA and TPB has established that attitude is a reliable predictor of intention. In an extension to the Fishbein and Ajzen model, our model presents variables thought to influence one's attitude.

PNB: Personal normative beliefs—an individual's moral obligation to perform an act.

Ajzen and Fishbein stated that personal normative beliefs substantially contributed to the explanation of variance in the intention to behave ethically or unethically. Our model included personal normative beliefs rather than the subjective norm. The influence of social pressure was presented in our model by including the personal environment that may influence attitude.

ES: Ego strength—the strength of one's conviction or one's self-regulating skills.

Individuals with high ego strength are expected to resist impulses and follow their convictions more than individuals with low ego strength. Trevino, Mischel [40], and Rest [47] cited ego strength as a factor in explaining ethical behavior.

LOC: Locus of control—the degree to which an individual perceives that a reward results from one's attributes or behavior rather than from outside forces.

Rotter [52] described two orientations for locus of control. Internally-oriented individuals believe events in their lives are determined by their own behavior and effort. Externally-oriented individuals believe events in their lives are determined by forces outside their control, such as fate, chance, etc.

## 3.1. Individual characteristics

Individual characteristics, such as sex and age, can create differences in intentions.

SEX: Gender—an individual characteristic.

Many authors state that the individual's gender could be an indicator of ethical or unethical behavior intention.

AGE: Age—an individual characteristic.

Dawson suggested that ethical perceptions change with age and experience.

PI: Perceived importance—the perception of the degree of importance of the ethical issue.

Based on Jones' proposition that moral intensity affects ethical intentions and behavior, Robin et al. developed a construct called perceived importance (PI) of the ethical issue. Using a scenario-based study, they report that the PI construct has a significant and substantial impact on ethical judgment and behavior intentions. Individuals who rated an issue high in PI were less likely to behave unethically; for an issue rated low in PI, individuals were more likely to behave in a way that might be judged unethical.

SCEN: Scenario—ethical scenario is a control variable and is based on the scenario being judged (see Appendix B).

Since five scenarios are used, the range is from one to five. Early research did not consider the effects of the characteristics of a given situation (scenario) but many researchers stated that the factors that influence ethical behavior may vary, depending on the particular situation. Loch and Conger state that one's attitude and ethical behavior are likely to vary in different situations and other research has

found differences in attitude based on the situation [24,33,39].

## 3.2. Influences of attitude

In the late 1980s, Bommer et al. presented an ethical decision-making model with several ''environmental'' factors that could affect a decision to behave ethically or unethically. For example, a person's perception of society's values could influence that person's judgment. The environmental influences are shown in our model as societal: belief system (religious and cultural values), personal (family, peers and one's own values and goals), professional (codes of conduct), legal (laws and government), and business (corporate goals and policy). Kreie and Cronan researched the influences of Bommer et al. and found that their influence varied depending on the situation; e.g., the legal environment might have a significant influence in a particular situation.

In addition to an individual's environmental influences, potential consequences of one's behavior have been shown to influence a person's attitude toward ethical behavior. Eining and Christensen examined software piracy and reported that consequences have a significant influence. Kreie and Cronan also found that consequences influence ethical decision-making.

SOC: Societal environment—society's values, one's culture. The societal environment represents the social and cultural values that impact the individual.
BEL: Belief system—religious values and beliefs developed in one's spiritual or religious environment.
PVAL: Personal values—one's personal values, goals, and experiences, moral level.
PE: Personal environment—the influence of family, peers and significant others, peer group.
PRF: Professional environment—codes of conduct and professional expectations within one's profession [23].
LGL: Legal environment—law, legislation, government.
BUS: Business environment—corporate goals and profit motive. The business environment reflects the corporate goals and profit motive of the business in which a person works [63].

CON: Consequences—awareness that behavior may have consequences that affect oneself and/or others.

Two factors shown in the ethical behavioral model were not examined in our study—perceived behavioral control and organizational climate.

## 3.3. Perceived behavioral control

The TPB model added perceived behavioral control to the original TRA. It is the perceived ease or difficulty of performing the behavior. Ajzen stated that the relative importance of predictors in the TPB would vary across behaviors and situations. For our study perceived behavioral control was not included because the actor in each scenario clearly had the ability to perform the behavior and there were no impediments to prevent it. Madden et al. stated that when the behavior in question was under one's volitional control, then perceived behavioral control would not be a relevant factor; therefore we did not measure it.

## 3.4. Organizational ethical climate

This represents the ethical culture of an organization as perceived by an individual. Many have proposed that ethical decision-making behavior in organizations occurs in a social context and is heavily influenced by characteristics of the organization's ethical environment [54,55]. Victor and Cullen identified five types of ethical climates in organizations—caring, law and code, rules, instrumental, and independence. In addition, they said that ethical climate varied for different industries, firms within industries, and organizational levels within firms. In our study this variable was constant. There was only one organization for the sample.

## 3.5. Methods

The IT ethical behavioral model hypothesized that intention was influenced by several factors including the decision maker's attitude toward the situation. In addition, attitude was influenced by the decision maker's environmental influences and possible consequences of behaving one way or another.

A questionnaire instrument was used to measure variables and to capture each respondent's intention to

Table 1
Ethical behavior intention by scenario[a]

| Behavioral intention | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 |
|---|---|---|---|---|---|
| 1–3 (Probable)[b] | 21.4% | 46.8% | 65.7% | 28.7% | 26.2% |
| 4 (Neutral) | 7.8% | 10.8% | 9.7% | 13.3% | 12.7% |
| 5–7 (Improbable) | 70.8% | 42.4% | 24.6% | 58.0% | 61.2% |
| Mean | 5.4 | 3.9 | 3.1 | 4.7 | 5.0 |
| Sample size | 411 | 406 | 402 | 390 | 386 |

[a] The means are on a scale of 1–7. Smaller values of behavioral intention indicate a greater intent to behave unethically, while larger values indicate a greater intent to behave ethically.

[b] Appendix C shows the detailed distribution of responses for behavioral intention.

behave ethically/unethically for five different computing scenarios. The scenarios contained representative ethical issues faced by computer professionals, including privacy, accuracy, and property [38], as well as access and security issues. The specific IT scenarios are given in Appendix B. The survey instrument used some instruments and measures from previous research. Appendix A contains a summary of the measures.

### 3.6. Sample

The population sample was selected from students in computing classes at a mid-western university in the United States.[4] There were a total of 423 survey responses for each scenario. With each student responding to five scenarios, the overall sample contained 1995 observations, after the removal of incomplete responses. The sample consisted of 48.2% female (51.8% male); their average age was 21.9 years with an average GPA of 3.1. The average work experience for these students was 2 years with 55% having no work experience. 54.8% of the students were juniors and seniors.

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[4] Much research has used students as subjects. These subjects have been assumed to be suitable surrogates for business managers and decision makers and results should be generally applicable to actual business managers. This is especially the case when researchers are interested in the ethical decision making process. Student samples can be used without a major threat to generalizability ["Methods in Business Ethics," *Journal of Business Ethics*, 9:6, June 1990, p. 463]. Moreover, Wyld and Jones indicate that when nontraditional students were used as subjects and compared to managers, there was no difference in the results. ["An Empirical Look at the Use of Managerial and Non-Managerial Student Subjects for Inquiries into Ethical Management," *Management Research News*, 20:9, 1997, pp. 18–30].

Table 1 presents summary information for ethical behavior intention by scenario. Respondents indicated whether they would act as the person did in the scenario (1 = highly probable and 7 = highly improbable). The ethical intention means ranged from 3.08 (greater intent to behave unethically) for scenario three to 5.35 (greater intent to behave ethically) for scenario one. These results are consistent with previous research and contrast the differences in scenarios [34]. For instance, Scenario 1 is based on a programmer that illicitly modified some code. This person's behavior had previously been judged fairly unethical and 70.8% (behavioral intention score of 5 or higher) of our respondents said that they would probably not behave in the same manner. In contrast, Scenario 3 described a person who used an employer's computer equipment for personal work after hours. The behavior had generally been judged less severely and 65.7% of the respondents said they would behave the same as the person described. Appendix C shows the detailed distribution of responses by scenario. In addition, Appendix D contains a detailed distribution of responses for behavioral intention for males and females within each scenario.

Table 2 presents summary information for behavior intention considering the perceived importance of each. The table showed that the intention to behave ethically or unethically was consistently different for those individuals who perceived the ethical issue as important compared to those who perceived the issue as unimportant. For each scenario the majority of the respondents who rated the ethical issue as important also said they would probably not behave the same way as the person in the scenario. The majority of respondents who said a given issue was unimportant,

Table 2
Ethical behavior intention by perceived importance and scenario[a]

| Behavioral intention | Scenario 1 | | Scenario 2 | | Scenario 3 | | Scenario 4 | | Scenario 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Imp[b] | UnImp | Imp | UnImp | Imp | UnImp | Imp | UnImp | Imp | UnImp |
| 1–3 (Probable)[c] | 12.9% | 46.8% | 26.3% | 76.4% | 41.2% | 84.1% | 18.3% | 52.2% | 15.4% | 66.6% |
| 4 (Neutral) | 4.7% | 14.5% | 11.4% | 7.3% | 5.9% | 6.5% | 6.6% | 16.4% | 6.4% | 4.1% |
| 5–7 (Improbable) | 82.4% | 38.7% | 62.3% | 16.3% | 52.9% | 9.3% | 75.1% | 31.4% | 78.2% | 29.3% |
| Mean | 5.9 | 3.9 | 4.9 | 2.4 | 4.3 | 2.3 | 5.5 | 3.6 | 5.7 | 3.1 |
| Sample size | 279 | 63 | 163 | 123 | 85 | 215 | 197 | 67 | 234 | 48 |

[a] The means are on a scale of 1–7. Smaller values of behavioral intention indicate a greater intent to behave unethically, while larger values indicate a greater intent to behave ethically.

[b] Imp—important issue (rating of 1–3 on a seven-point scale); UnImp—unimportant issue (rating of 5–7 on a seven-point scale). The sample size does not include neutral responses (rating of 4).

[c] Appendix E shows the detailed distribution of responses for behavioral intention.

however, said they would probably behave the same as the person in the scenario. For Scenario 1, for instance, 81.6% (279) of the subjects said the ethical issue was important and 82.4% of these said they would probably not behave the same way. While for Scenario 3, 72% (215) of the respondents said the issue was not important and 84.1% of those respondents said they would probably behave in the same way. Appendix E shows the detailed distribution of responses for behavioral intention considering the perceived importance of each scenario.

### 3.7. Results

Two general models (Eqs. (2) and (3)) were developed using regression analysis. To increase the power of the statistical tests, a 10% significance level ($\alpha = 0.10$) was used. The behavioral intention model (Eq. (2)) was developed to test the relative importance of each independent variable on the intention to behave ethically or unethically. The attitude model (Eq. (3)) tested the importance of each of the independent influences of attitude on the measure of attitude toward the ethical behavior in question. Table 3 presents the regression analysis results of the behavioral intention and attitude models. For behavioral intention and attitude, models were developed for each of the five scenarios and for a full regression model.

Table 3 indicates that, for the full model (all scenarios), 61% of the variation in behavioral intention is explained by the components of the model. Specifically, in the full model, behavioral intention is explained by the attitude, personal normative beliefs, perceived importance, ego strength, sex, age, and moral judgment ($D$-score). In general, the regression models found attitude and personal normative beliefs significant. Perceived importance (PI), sex, and ego strength were significant in explaining behavioral intention in the full model and four of the five scenario-based models.

The attitude model is also shown in Table 3. For the full model, attitude toward an ethical action is explained by consequences, personal values, one's belief system, society, laws, professional codes of ethics, and the personal environment components. Awareness of consequences is the only variable that is significant in each scenario-based attitude model. One's belief system is significant in four of the five scenario-based models—it is missing in Scenario 3.

Table 4 presents the behavioral intention model and attitude models based on the perceived importance of the issue. For those who perceive the ethical issue as important, as much as 66% of the variance in behavioral intention is explained (Scenario 3). Moreover, in the case where the issue was considered important, behavioral intention was generally explained by attitude, personal normative beliefs, and ego strength. Yet, when the issue was considered unimportant, the models were somewhat different for both behavioral intention and attitude. Attitude was still consistently a significant variable but personal normative beliefs and ego strength are not significant in all the scenario-based models. In addition, there was less stability in the models.

Table 3
Perceived importance included in the model

| Analysis | Behavioral intention (Eq. (2)), significant variables, $\alpha = 0.10$ | $R^2$ | Attitude (Eq. (3)), significant variables, $\alpha = 0.10$ | $R^2$ |
|---|---|---|---|---|
| Full regression model | Attitude toward ethical behavior<br>Personal normative beliefs<br>Perceived importance<br>Ego strength<br>Sex<br>$D$-score<br>Age | 0.61 | Consequences<br>Personal values<br>Belief system<br>Societal environment<br>Legal environment<br>Professional environment<br>Personal environment | 0.12 |
| Scenario 1 regression model | Attitude<br>Personal normative beliefs<br>Perceived importance<br>Ego strength<br>Sex<br>Locus of control<br>Age | 0.49 | Consequences<br>Personal values<br>Belief system | 0.14 |
| Scenario 2 regression model | Attitude<br>Personal normative beliefs<br>Perceived importance<br>Ego strength<br>Sex<br>$D$-score<br>Locus of control | 0.63 | Consequences<br>Belief system | 0.14 |
| Scenario 3 regression model | Attitude<br>Personal normative beliefs<br>Perceived importance<br>Ego strength<br>Sex | 0.57 | Consequences<br>Personal environment | 0.06 |
| Scenario 4 regression model | Attitude<br>Personal normative beliefs<br>Sex<br>$U$-score<br>Age | 0.51 | Consequences<br>Belief system<br>Legal environment | 0.13 |
| Scenario 5 regression model | Attitude<br>Personal normative beliefs<br>Perceived importance<br>Ego strength | 0.57 | Consequences<br>Personal values<br>Belief system<br>Societal environment<br>Business environment | 0.13 |

## 4. Discussion and conclusions

Our results show that the field of IT ethics has many dimensions and that past models have not captured all of its dimensions. Significant variables were found in the proposed two-stage model. First, the present research confirms that IT behavioral intention involves many components. As previously, behavioral intention is influenced by attitude, personal normative beliefs, ego strength, sex, and moral judgment (as measured by the $D$-score). Prior to our study, however, perceived importance and age had not been considered in IT ethics. They were found to have a significant impact on the intent to behave ethically/ unethically.

If the ethical issue was perceived as important, the majority of respondents said they would probably not behave unethically (i.e., as the person in the scenario

Table 4
Ethical behavior model—perceived importance

| Analysis | Important issue | | | | Unimportant issue | | | |
|---|---|---|---|---|---|---|---|---|
| | Behavioral intention (Eq. (2)), significant variables, $\alpha = 0.10$ | $R^2$ | Attitude (Eq. (3)), significant variables, $\alpha = 0.10$ | $R^2$ | Behavioral intention (Eq. (2)), significant variables, $\alpha = 0.10$ | $R^2$ | Attitude (Eq. (3)), significant variables, $\alpha = 0.10$ | $R^2$ |
| Full regression model | Attitude<br>Personal normative beliefs<br>Ego strength<br>Age<br>Sex<br>*D*-score | 0.48 | Consequences<br>Personal values<br>Professional environment<br>Personal environment | 0.10 | Attitude<br>Personal normative beliefs<br>Sex<br>Ego strength | 0.40 | Belief system<br>Legal environment | 0.04 |
| Scenario 1 regression model | Attitude<br>Personal normative beliefs<br>Sex<br>Age<br>*D*-score | 0.41 | Consequences | 0.09 | Attitude<br>Locus of control<br>Ego strength | 0.48 | Belief system<br>Consequences | 0.14 |
| Scenario 2 regression model | Attitude<br>Personal normative beliefs<br>Ego strength | 0.55 | Consequences<br>Personal environment | 0.13 | Attitude<br>*D*-score<br>Sex | 0.42 | Professional environment<br>Belief system<br>Personal values | 0.13<br><br>0.01 |
| Scenario 3 regression model | Attitude<br>Personal normative beliefs<br>Age | 0.66 | Consequences<br>Personal values | 0.14 | Personal normative beliefs<br>Attitude<br>Ego strength<br>Sex | 0.25 | Personal environment | |
| Scenario 4 regression model | Attitude<br>Personal normative beliefs<br>Ego strength | 0.35 | Consequences | 0.8 | Attitude<br>Personal normative beliefs | 0.58 | | 0.00 |
| Scenario 5 regression model | Attitude<br>Personal normative beliefs<br>Ego strength<br>*U*-score | 0.43 | Consequences<br>Personal values | 0.15 | Attitude | 0.45 | | 0.00 |

did). On the other hand, the majority of those that perceived the ethical issue to be unimportant said they would probably behave as the person in the scenario did.

In the first stage of our model, which proposed variables that influence behavioral intention, two variables were significant in every regression model. For all scenarios, combined and also when modeling each scenario separately, attitude and personal normative beliefs were significant: one's favorable or unfavorable evaluation of the behavior in question

and one's sense of moral obligation were consistently significant indicators of intention to behave ethically or unethically. In addition to attitude and personal normative beliefs, three variables were significant in all but one model—ego strength, perceived importance and sex. A person's gender, strength of convictions, and judgment of the importance of the ethical issue consistently affected behavioral intention. The fact that two of these variables—ego strength and perceived importance—are only missing in the regression model for Scenario 4 raises the question

of whether other scenarios would confirm the consistent role ego strength and perceived importance play in IT ethics.

The second stage of the IT ethics model examined what factors influenced attitude. Though significant factors were found, the $R^2$ values were smaller than in the first-stage model. The full and scenario-based regression models showed that only one factor consistently influenced attitude—awareness of consequences. Attitude clearly has many dimensions: that of an individual in any given situation is dependent on both internal (personal values, belief system) and external (societal environment, legal environment, etc.). For instance, Scenario 5 involved a second person—a manager—who told the actor to do something that might be considered unethical. Such a situation may show why business and societal environments cause different behavior.

IT ethics models that vary by perceived importance were also examined. For the full regression model, common significant variables were found for both important and unimportant issues—attitude, personal normative beliefs, ego strength, and sex. When an issue was seen as important, age and *D*-score were also significant. Attitude was significant in all models. Personal normative beliefs was a significant influence in all the models when perceived importance was high. In contrast, when the issue was not seen as important, attitude was the only consistently significant variable.

### 4.1. Implications for business

Organizations have an important responsibility when it comes to addressing ethical behavior of its personnel. Companies may use monitoring and detection measures but our study indicates there are some deterrent measures that should be used as well. The best deterrent measures are somewhat dependent on the situation and ethical issue.

Our study confirms research showing that attitude has a significant influence on behavioral intention. The second-stage of the model showed that one variable was consistently significant in influencing attitude: awareness of consequences. Though a company has little, if any, impact on employees' personal and social environment, it should emphasize the organization's ethical policies and the consequences of not following them. Similarly, many universities have a problem with students' lack of awareness and/or understanding of ''proper use'' policies. They have begun to emphasize their policies in the classroom and the penalties have resulted in a decrease in inappropriate or illegal use of IT.

Other significant variables also provide support for companies actively pursuing an ethics program. Moral judgment and personal normative beliefs can increase individual responsibility and help in ethical decision-making; these can be promoted through company training. Research using students has shown peer-led ethical discussions have some impact on moral reasoning [41]. Trevino et al. found that employees must believe the company's ethics policies exist to promote ethical behavior not just to protect top management from legal action.

We have seen a trend in ethics research that indicates a change in people's sense of important ethical issues. Over 4 years work using the scenarios, there has been a change in how subjects view Scenario 5, which describes someone who copies a database of personal information for use in new ways. The number of subjects who said this was unethical has increased significantly over time. Perhaps this is due to a greater awareness of threats posed to people's privacy through IT when using the Internet.

### Appendix A

Instruments and measures for the variables

| Variable | Test |
| --- | --- |
| Intention to behave ethically/unethically | Fishbein and Ajzen's one item on a seven-point scale |
| Attitude | Ajzen's [2] one item[a] |
| Personal normative beliefs | Schwartz and Tessler's one item on a five-point scale |
| Ego strength | Fourth sub-scale of Barron's Ego Strength Scale [9]. Eleven items on a yes/no scale are used to assess one's strong/weak ego strength |

**Appendix A.** (*Continued*)

| Variable | Test |
| --- | --- |
| Locus of control | Rotter's instrument. Twenty-nine items are used to assess one's internal/external locus of control |
| Moral judgment | Rest's Defining Issues Test (DIT) |
| Sex | One demographic item |
| Age | One demographic item |
| Scenario | Five scenarios |
| Perceived importance | Robin et al.'s four items on a seven-point scale |
| Influences of attitude | Kreie and Cronan's eight items on a five-point scale (http://cbae.nmsu.edu/~jkreie/ethics/ethics.shtml) |

[a] Banerjee et al. used three questions on a seven-point scale where this study utilized only one question on a dichotomous scale for efficiency. A subsequent validation of the one question of attitude when compared to the three-question measure indicated a strong correlation, hence one question was used to measure attitude.

## Appendix B. Scenarios

The scenarios used in this instrument are modified versions of scenarios presented in *Ethical Issues in Information Systems*, Dejoie, R, Fowler, G. and Paradice, D. Boyd and Fraser Publishing Company, Boston, MA 02116, 1991.

These scenarios have been used in previously published research, which is cited in the current study. These scenarios present various ethical issues which can be related to some of the ethical issues presented by R.O. Mason: Scenario 1—accuracy; Scenario 2—property; Scenario 3—property; Scenario 4—property; Scenario 5—privacy. A copy of the complete questionnaire is available at: http://cbae.nmsu.edu/~jkreie/ethics/ethics.shtml.

*Scenario 1*: A programmer at a bank realized that he had accidentally overdrawn his checking account. He made a small adjustment in the bank's accounting system so that his account would not have an additional service charge assessed. As soon as he made a deposit that made his balance positive again, he corrected the bank's accounting system.

*Scenario 2*: With approval from his boss, a person ordered an accounting program from a mail-order software company. When the employee received his order, he found that the store had accidentally sent him a very expensive word processing program as well as the accounting package that he had ordered. He looked at the invoice, and it indicated only that the accounting package had been sent. The employee decided to keep the word processing package.

*Scenario 3*: A computer programmer enjoyed building small computer applications to give his friends. He would frequently go to his office on Saturday when no one was working and use his employer's computer to develop computer applications. He did not hide the fact that he was going into the building; he had to sign a register at a security desk each time he entered.

*Scenario 4*: A computing service provider offered the use of a program at a premium charge to subscribing businesses. The program was to be used only through the service company's computer. An employee at one of the subscribing businesses obtained a copy of the program accidentally, when the service company inadvertently revealed it to him in discussions through the system (terminal to terminal) concerning a possible program bug. All copies of the program outside of the computer system were marked as trade secret, proprietary to the service, but the copy the customer obtained from the computer was not. The employee used the copy of the program after he obtained it, without paying the usage fee to the service.

*Scenario 5*: A marketing company's employee was doing piece work production data runs on company computers after hours under contract for a state gov-

ernment. Her moonlighting activity was performed with the knowledge and approval of her manager. The data were questionnaire answers of 14,000 public school children. The questionnaire contained highly specific questions on domestic life of the children and their parents. The government's purpose was to develop statistics for behavioral profiles, for use in public assistance programs. The data included the respondents' names, addresses, and so forth.

The employee's contract contained no divulgement restrictions, except a provision that statistical compilations and analyzes were the property of the government. The manager discovered the exact nature of the information in the tapes and its value in business services his company supplied. He requested that the data be copied for subsequent use in the business. The employee decided the request did not violate the terms of the contract, and she complied.

## Appendix C

Detailed distribution of ethical behavior intention by scenario (see Table C.1).

Table C.1
Ethical behavior intention by scenario[a]

| Behavioral intention | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 | Scenario 5 | All scenarios |
|---|---|---|---|---|---|---|
| 1 (Highly probable) | 6.8% | 21.2% | 28.6% | 7.2% | 5.4% | 13.9% |
| 2 | 7.1% | 16.3% | 21.4% | 10.0% | 9.6% | 12.9% |
| 3 | 7.5% | 9.4% | 15.7% | 11.5% | 11.1% | 11.0% |
| 4 | 7.8% | 10.8% | 9.7% | 13.3% | 12.7% | 10.8% |
| 5 | 8.3% | 10.3% | 7.5% | 13.1% | 12.2% | 10.2% |
| 6 | 19.0% | 14.3% | 7.0% | 20.8% | 14.5% | 15.1% |
| 7 (Highly improbable) | 43.6% | 17.7% | 10.2% | 24.1% | 34.5% | 26.0% |
| Mean | 5.4 | 3.9 | 3.1 | 4.7 | 5.0 | 4.4 |
| Sample size | 411 | 406 | 402 | 390 | 386 | 1995 |

[a] The means are on a scale of 1–7. Smaller values of behavioral intention indicate a greater intent to behave unethically, while larger values indicate a greater intent to behave ethically.

## Appendix D

Detailed and summary distribution of ethical behavior intention by sex and scenario (see Table D.1).

Table D.1
Ethical behavior intention by sex and scenario[a]

| Behavioral intention | Scenario 1 | | Scenario 2 | | Scenario 3 | | Scenario 4 | | Scenario 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 1 (Highly probable) | 7.5% | 5.2% | 29.6% | 11.5% | 36.0% | 20.9% | 9.4% | 4.8% | 6.0% | 4.9% |
| 2 | 7.9% | 6.2% | 16.4% | 16.7% | 22.0% | 20.9% | 10.3% | 9.1% | 11.9% | 6.5% |
| 3 | 13.1% | 1.6% | 9.4% | 9.4% | 12.9% | 17.8% | 14.8% | 7.5% | 11.4% | 10.9% |
| 4 | 6.1% | 9.8% | 8.0% | 14.1% | 9.1% | 10.5% | 14.8% | 11.8% | 14.9% | 10.3% |
| 5 | 9.8% | 6.2% | 8.5% | 12.5% | 7.7% | 7.3% | 14.8% | 11.3% | 11.4% | 13.0% |
| 6 | 16.4% | 22.3% | 12.2% | 16.7% | 4.3% | 10.0% | 17.7% | 24.2% | 12.4% | 16.9% |
| 7 (Highly improbable) | 39.3% | 48.7% | 16.0% | 19.3% | 8.1% | 12.6% | 18.2% | 31.2% | 31.8% | 37.5% |
| Mean | 5.1 | 5.7 | 3.5 | 4.3 | 2.8 | 3.4 | 4.4 | 5.1 | 4.8 | 5.2 |
| Sample size | 214 | 193 | 213 | 192 | 209 | 191 | 203 | 186 | 201 | 184 |

[a] The means are on a scale of 1–7. Smaller values of behavioral intention indicate a greater intent to behave unethically, while larger values indicate a greater intent to behave ethically.

# Appendix E

Detailed distribution of ethical behavior intention by perceived importance and scenario (see Table E.1).

Table E.1
Ethical behavior intention by perceived importance and scenario[a]

| Behavioral intention | Scenario 1 | | Scenario 2 | | Scenario 3 | | Scenario 4 | | Scenario 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Imp[b] | UnImp | Imp | UnImp | Imp | UnImp | Imp | UnImp | Imp | UnImp |
| 1 (Highly probable) | 3.9% | 21.0% | 11.4% | 43.1% | 20.0% | 40.9% | 3.1% | 17.9% | 2.2% | 27.1% |
| 2 | 2.9% | 14.5% | 8.4% | 23.6% | 11.8% | 27.9% | 5.6% | 19.4% | 6.0% | 18.8% |
| 3 | 6.1% | 11.3% | 6.6% | 9.8% | 9.4% | 15.4% | 9.6% | 14.9% | 7.3% | 20.8% |
| 4 | 4.7% | 14.5% | 11.4% | 7.3% | 5.9% | 6.5% | 6.6% | 16.4% | 6.4% | 4.2% |
| 5 | 6.8% | 6.5% | 8.4% | 6.5% | 11.8% | 3.3% | 12.2% | 9.0% | 11.1% | 16.7% |
| 6 | 20.8% | 12.9% | 19.2% | 7.3% | 12.9% | 2.8% | 25.4% | 11.9% | 18.4% | 6.3% |
| 7 (Highly improbable) | 54.8% | 19.4% | 34.7% | 2.4% | 28.2% | 3.3% | 37.6% | 10.5% | 48.7% | 6.3% |
| Mean | 5.8 | 3.9 | 4.9 | 2.4 | 4.3 | 2.3 | 5.5 | 3.6 | 5.7 | 3.1 |
| Sample size | 279 | 63 | 163 | 123 | 85 | 215 | 197 | 67 | 234 | 48 |

[a] The means are on a scale of 1–7. Smaller values of behavioral intention indicate a greater intent to behave unethically, while larger values indicate a greater intent to behave ethically.

[b] Imp—important Issue (rating of 1–3 on a seven-point scale); UnImp—unimportant issue (rating of 5–7 on a seven-point scale). The sample size does not include neutral responses (rating of 4).

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