

Modeling IT product recall intention based on the theory of reasoned action and information asymmetry: a qualitative aspect

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Abstract This study proposes an ethical model of IT product recall intention based on the theory of reasoned action considering information asymmetry. This study is one of the first to consider information asymmetry in the formation of IT ethical intention. In the proposed model, nine propositions are provided for understanding the formation of the ethical intention of IT providers. More specifically, IT product recall intention is negatively influenced by information hiding and opportunism practicing, while opportunism practicing is positively influenced by information hiding. Furthermore, both information hiding and opportunism practicing are positively influenced by information asymmetry and negatively influenced by ethical attitude and subjective ethical norm. Last, the implications and limitations are provided.

Keywords Information asymmetry · Theory of reasoned action · Opportunism · Information hiding

Ethics are considered an inquiry into the nature and grounds of morality where the morality is applied to mean moral attitude, standards, and rules of conduct (Thong and Yap 1998).

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An ethical issue often arises whenever one party in pursuit of its goals engages in intention and behavior that affect the ability of another party to pursue its goals. If the effect is helpful, good, right, or just, the intention or behavior is praiseworthy. However, the intention or behavior is considered unethical if the effect is harmful, bad, wrong, or unjust (Mason 1995). The ethical concept that applies well in IT industries, and IT service providers and IT usage leads to the discussion of information ethics. Information ethics can be referred as a set of principles used for moral decision making related to IT, its service and usage. That is, information unethical behavior is concerned with conflicts with ethics in the use of information, information technologies, and information systems (Kuo and Hsu 2001).

Most of previous studies regarding information ethics often examine their issues from a perspective of IT users (e.g., software pirating, identity theft, etc.) rather than that of IT providers (e.g., information accuracy, IT product hidden flaws, etc.) (Mason 1986). Indeed, the information ethics of IT providers are very important for global economics since IT product has a very high penetration rate across many countries around the globe, suggesting its substantial influence on everyone's daily life.

One of the popular issues in information ethics of IT providers relates to their decision to recall their IT product due to hidden technical flaws that may potentially hurt IT users. In fact, massive IT product recalls have been a serious problem across IT industries because they are costly and could be potentially harmful to the reputation of the IT providers for a certain period of time. For example, notebook batteries have been frequently recalled by IT manufacturers because they have been found to overheat under certain conditions, possibly causing a risk of fire. Note that the recalls go beyond computers, involving other electronic IT products as well. As a result, it is important to know the IT product recall intention in depth because any hesitation for the recalls or decisions of not recalling the problematic product could jeopardize consumers' safety. For example, it has been reported from time to time that IT users are hurt by exploding cell phone batteries before the manufacturers announce a massive battery recall.

Furthermore, some IT product suppliers may choose not to take actions of recalling their product with some mite flaws which are not known by its users due to information asymmetry. Information asymmetry refers to the extent to which a firm has more information than its customers relating to the firm's area of social responsibility (e.g., Ramaswami et al. 1997). Information asymmetry occurs when the IT users do not have as much information about the potential risk of using IT product of a firm, as the firm itself (Kulkarni 2000). Consequently, understanding IT product recalls from information asymmetry is very important but ignored in previous research.

For that reason above, this study attempts to fill this gap by embedding information asymmetry into a model of IT product recalls based on theory of reasoned action (TRA). TRA has been proved in previous research to be useful and appropriate for framing intention and behavior in terms of ethics. However, this study substantially differs from previous research in three critical ways. First, this study is one of the first to examine information asymmetry in the formation of IT ethical intention. Previous research examining IT ethical issues seldom take potential market conditions (e.g., market information) into account in addition to ethical attitude and norm. Information asymmetry is such an important factor that represents certain market conditions for critical reference of business firms in influencing their behavioral intention. On the other hand, previous research based on purely information asymmetry often examines unethical opportunism without taking ethical attitude and norm into consideration, which is likely to misinterpret the formation of IT unethical intention. Collectively, this study complements the previous research focusing only on either ethical attitude or information asymmetry.

Second, this study is also one of the first to propose two critical potential mediators between ethical attitude and intention in TRA. The addition of the mediators in the framework can help learn in depth about how IT ethical intention is indirectly influenced by attitude via different paths. Note that the mediators between attitude and intention were not mentioned in theory of reasoned action because TRA only focused on the perception and preference of an individual's party without considering his or her alternative choices or additional actions (e.g., information hiding and opportunistic practicing). That is to say, the mediators emerge to be critical in the formation of ethical intention since both attitude and subjective norm together are unlikely to directly influence behavioral intention given alternative choices of an individual party based on market information. Note that this study examines the influence of information asymmetry on ethical intention from firms' aspect (e.g., to be opportunistic or not to be opportunistic) rather than consumers' aspect (e.g., to trust or not).

1 The role of information asymmetry in TRA

A theory on which the line of IT ethical research is frequently based is the TRA proposed by [Ajzen and Fishbein \(1980\)](#). TRA ([Ajzen 1991](#); [Ajzen and Fishbein 1980](#)) has been extensively applied as a model to predict behavioral intentions in information ethics. [Fishbein and Ajzen \(1975\)](#) divide the beliefs antecedent to behavioral intention into two conceptually distinct dimensions: behavioral and normative. The behavioral beliefs are postulated to be the underlying influence on an individual's attitude toward performing the ethical or unethical behavior, whereas the normative beliefs affect the individual's subjective norm about performing the behavior. Therefore, information or salient beliefs influence intentions and subsequent behavior either through attitudes or through subjective norms. Consequently, the TRA posits that behavioral intention is a function of salient attitude and subjective norms about the likelihood that performing a particular behavior will lead to a specific outcome. The TRA model not only predicts IT behavioral intention well but also is useful for identifying where and how to target IT strategies for changing and improving the intention ([Sheppard et al. 1988](#)).

The TRA rooted in social psychology is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them, and that people consider the implications of their actions before they decide to engage or not engage in a given behavior ([Ajzen and Fishbein 1980](#); [Ajzen 1985](#)). However, this assumption leaves out the changing market information that shifts from time to time. This phenomenon suggests the necessity of taking information asymmetry into serious consideration in TRA when ethical issues occur in global markets full of different information, and that is also what this study attempts to cover. At any rate, the following section will focus on the framework of IT product recall intention using information asymmetry in TRA model.

2 Research framework and proposition development

This study proposes a framework that contains nine propositions. In the framework, IT product recall intention is proposed to be simultaneously influenced by information asymmetry, ethical attitude and subjective ethical norm via the mediation of information hiding and opportunism practicing. Besides, opportunism practicing is also positively influenced by information hiding. The rationale and discussion for the nine propositions are justified in the followings.

Opportunism represents a specific course of action that is morally speculative in a risky adventure. When a firm's decision makers perceive a speculative situation as a good chance or choice for them (compared with when they perceive it as a threat), they consider that situation to be acceptable and can be practiced and thus intend to perform actions opportunistically to obtain their goals (e.g., [Srinivasan et al. 2002](#)). In such cases, managers are likely to take proactive measures by evading their wrongdoing and having no intention to conduct IT product recalls ([Srinivasan et al. 2002](#)).

In other words, the opportunistic managers are likely to perceive opportunistic methods as potential sources of acquiring benefit (or avoiding losses) for their organization and thus respond proactively to do things against business ethics, leading to their low intention to execute IT product recalls after the occurrence of the mistakes they should be responsible for. Thus, the proposition is derived as below.

P1: Opportunism practicing is negatively related to IT product recall intention.

The information hiding that arises from resultant information asymmetry may influence the probability of a firm acting opportunistically, and ultimately, a firm's ethical intention and behavior ([Kulkarni 2000](#)). Firms' opportunistic action may produce rents in the short run, since the firm may save on the costs of waste disposal, remediation, environmental clean-up and so on ([Kulkarni 2000](#)), suggesting their intention to turn a blind eye to product recalls. More specifically, if information hiding about product flaws is done successfully by IT providers, their customers are unlikely aware of potential product deficiency, encouraging the providers to try practicing opportunism to reduce their loss by conducting recalls of the product. On the other hand, if IT providers evaluate that they are unlikely to hide the information for a certain period of time, they are unlikely to take a risk by practicing opportunism and turning a deaf ear to product problems.

The existence of information asymmetry and opportunism has important implications for corporate ethics ([Kulkarni 2000](#)). Firms' opportunism practicing represents their self-interest seeking with guile ([Williamson 1985](#)). In this study, information hiding (i.e., hidden knowledge or adverse selection) implies that IT firms may, for instance, deliberately withhold information about the negative impact of their products, processes, and waste from customers and societies (e.g., [Akerlof 1970](#)). The short-term profit maximization objective of a firm may create an incentive for it to hide harmful information and act opportunistically ([Kulkarni 2000](#)) given serious information asymmetry between IT providers and users. Consequently, information hiding is negatively related to IT product recall intention and positively to opportunism practicing.

P2: Information hiding is negatively related to IT product recall intention.

P3: Information hiding is positively related to opportunism practicing.

Information hiding is an opportunistic course that arises from information asymmetry ([Nayyar 1990](#); [Stiglitz 1985](#)). Economic actors in the market are likely confronted with substantial information asymmetry among different parties ([Rothenberger and Truffer 2003](#)). This phenomenon allows ample scope for opportunistic action, meaning the maximization of personal or organizational gains at the expense of the transaction partner by information hiding ([Rothenberger and Truffer 2003](#)). Indeed, the more seriously the information asymmetry is, the more likely managers take measures to hide critical information so as to obtain benefits or avoid losses ultimately. On the other hand, managers are unlikely to hide important information only for their own usage if information is already openly shared or can be obtained easily via official channels. Collectively, IT firms choose different strategies (e.g., information hiding) to deal with their problems based on different circumstances (the level of information

asymmetry). Thus, information asymmetry is proposed to be positively related with information hiding.

P4: Information asymmetry is positively related to information hiding.

The general problem faced by the customer is information asymmetry, or the inability to evaluate IT quality accurately prior to purchase, leading to the exposure to IT supplier opportunism (Mishra et al. 1998). Presence of information asymmetry enables people to consider practicing opportunism (John 1984) due to its temptation to obtain potential benefits or avoid harmful losses. It is noted that the short-term profit maximization objective of a firm is likely to create an incentive for it to act opportunistically given information asymmetry (Kulkarni 2000), suggesting that information asymmetry leads people into the persuasion that they can take advantage of the information asymmetry to gain their goal. In other words, firms are likely to be encouraged to take opportunistic practices if they believe that such practices won't be noticed or found due to a high level of information asymmetry (e.g., IT users know nothing about fatal problems of their IT product). Collectively, information asymmetry helps strengthen firms' attempt to practice opportunism, and consequently weaken IT product recall intention. The proposition is thus stated as below.

P5: Information asymmetry is positively related to opportunism practicing.

Ethical attitude is referred as general feelings of favorableness or unfavorableness for a particular ethical behavior (e.g., Ajzen and Fishbein 1980). Ethical attitude can be also seen as a system of ethical values that are standards of preference serving as perceptual screens in the process of interpretation (Mills and Moshavi 1999). Ethical attitude can assist the IT providers in discriminating among possible courses of action and evaluating the "correctness" of the action taken (Simon 1957; Stymne 1970).

Ethical attitude frees IT providers from the rigidity of rationality by providing a set of standards that are not confined by their customs and precedent (Simmel 1971). From a perspective of information asymmetry, ethical attitude influence IT product recall intention via both information hiding and opportunism practicing. First, a firm's decision maker who possesses negative ethical attitude is likely to hide information for the mistakes his or her firm should be responsible for due to tremendous cost or blames in case of the recalls. Second, the decision maker with negative ethical attitude is also likely to practice opportunism that helps easily accomplish his or her mission or goal through a short cut (i.e., relieving his or her psychological pressure). Collectively, ethical attitude can be thought of as an expanded frame comprising moral and ethical values that enables decision makers to act in the customers' best interest (Mills and Moshavi 1999), resulting in it negative influence on both information hiding and opportunism practicing. Thus, two propositions are developed as below.

P6: Ethical attitude is negatively related to information hiding.

P7: Ethical attitude is negatively related to opportunism practicing.

The social component of Fishbein and Ajzen's model is the subjective norm (Fishbein and Ajzen 1975), which is originally considered the perception of an individual that most people who are important to him think that he should or should not act a given behavior (Ajzen and Fishbein 1980). This study uses subjective ethical norm to distinct from traditional subjective norm because, to IT providers, most people who are important to the providers are their customers. Consequently, subjective ethical norm is defined herein as the perception of IT providers that most of their customers think they should or should not act a given ethical behavior during providing IT product or service to the customers.

Given that customers generally disfavor being unethically cheated, the more IT providers perceive that their customers are likely to think they should engage in the ethical behavior, the less likely the providers intend to hide information and practice opportunism. In other words, information hiding and opportunism practicing become weakened if IT providers try to comply with their customers' belief that IT providers should engage in IT ethics, leading to the negative influence of subjective ethical norm on information hiding and opportunism practicing. Consequently, two propositions are derived as below.

P8: Subjective ethical norm is negatively related to information hiding.

P9: Subjective ethical norm is negatively related to opportunism practicing.

3 Conclusions

This study proposes IT product recall intention and its antecedents from the angles of business organizations and their market information. This study provides a nexus between the TRA and organizational economics (e.g., information asymmetry) in IT ethics. Such nexus is so important because [Carlin and Strong \(1995\)](#) have asserted that organizational economics provides a significant perspective on organizational ethics (based on TRA), implying the relationship between information asymmetry, attitude and norm (as presented in this study). Drawing on the literature in organizational economics, our study demonstrates that information asymmetry can be contingent on how information substantially influences the major stakeholders (i.e., business firms) who are supposed to be socially responsible for their own IT product in case of any fatal drawbacks.

As the information asymmetry often arises suddenly in a market, a firm that is weak at ethical attitude may withhold or manipulate some of the information about the safety of its inferior IT products. As a result, its intention to problematic IT product may cause serious casualties in a society. This research indicates the substantial indirect influence of information asymmetry on IT product recall intention via the mediation of information hiding and opportunism practicing, which has been rarely mentioned in IT ethics. Collectively, although information asymmetry could make firms give in to temptation for unethical actions, the firms can turn an honest penny ultimately by performing ethical behavior given their ethical attitude has been strongly built (e.g., weakening the intent to hide information and practice opportunism). That is to say, regular education and training in ethics are necessary for their organizational members. Accordingly, IT firms should be aware of the expectation of their customers in terms of ethics (i.e., subjective ethical norm) and try their best to surpass the expectation so that unethical intent related to information hiding and opportunism practicing can be eschewed.

Our study examines whether a firm can resist the temptation of information asymmetry to act unethically in the long run and not misuse their information advantages. Our paper outlines how it may be possible for a firm to leverage its ethical attitude and subjective ethical norm as a source of strengthening its ethical intention to perform IT product recall in case of their wrongdoing or mistakes.

Although this study proposes that three antecedents related to firms' beliefs and their market information have the most influence on recall intention, different determinants may be obtained for other unethical behavioral intention. Future researchers can try to explore more antecedent factors (e.g., ethical self-efficacy) that may potentially influence firms' intention on IT recalls and also conduct empirical investigation as important complementarity of this research.

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