Ethical judgments in supply chain management: a scenario analysis

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Abstract

Purpose – The purpose of this study is to empirically analyze managers’ ethical judgments in supply chain management. It investigated the influence of those judgments on trust and collaboration in relationships with suppliers.

Design/methodology/approach – A scenario-based method was applied to measure managers’ ethical judgments using a sample of 341 data sets collected via survey. Structural equation modeling was utilized to test the proposed hypotheses associating ethical judgments with trust and collaboration in supply chains.

Findings – This study illustrates that managers’ ethical judgments in bidding/contracting, information management and inventory management significantly increase trust, which in turn increases supply chain collaboration.

Originality/value – The study extends our understanding of ethical judgments in the supply chain management context. Its findings on the causality among ethical judgment, trust and supply chain collaboration provide an effective approach to the management of supplier relationships.

Keywords Scenario analysis, Supply chain management, Supply chain ethics, Ethical judgments, Supply chain trust

Paper type Research paper

1. Introduction

The past several years have witnessed increasing interest in ethical supply chain management (SCM) issues relating to business sustainability or social responsibilities/values (Drake and Schlachter, 2007; Gold et al., 2010; Svensson and Bååth, 2008). In line with this development, many firms have voluntarily established ethical codes and fostered ethical cultures for beneficial co-existence with business partners. Meanwhile, governments have pursued various strategies and policies intended to identify and resolve conflicts among supply chain partners. However, unethical business practices still occur in many buyer-seller relationships, especially between many large firms and small- and medium-sized enterprises (SMEs). Some firms nonetheless might not have been convinced that business ethics in supply chains affects long-term relationships, and thus might not have made sufficient efforts to establish business ethics as a company-wide strategic practice.

Previous studies have made both academic and managerial contributions to our enhanced understanding of ethics in SCM. For example, Halldórsson and Skjott-Larsen (2006), Becker et al. (2013) and Hernández-Espallardo et al. (2010) suggest that ethical approaches to SCM create collaborative business environments among firms. Theoretical and empirical investigations of ethical judgment in the supply chain, however, are still rare. Specifically, there is little available evidence linking ethical judgment and key SCM factors such as inter-organizational trust and collaboration. Moreover, studies on supply chain ethics have focused on unethical behaviors or ethical codes at the organizational level (Becker et al., 2013; Fawcett et al., 2007; Ballou, 2007); little research has been done on supply chain ethics at the individual level. As supply chain managers are boundary-spanners working at the point of contact with business partners, their judgments, morality and intentions reflect, and also determine their organizations’, ethical or unethical behaviors. Accordingly, the dimensions of managers’ ethical judgments and their impact on relationships with business partners, not to mention organizational performance, need to be studied in terms of business strategies to determine the role of ethical judgment in SCM.

Scenario analysis, a method of describing a respondent’s perception of, faith in and attitude to a scenario or situation (Barter and Renold, 1999) is helpful in the study of subjective topics, such as ethics, morality and intentions, that are difficult for respondents to discuss (Barter and Renold, 1999). Scenario analysis minimizes social desirability bias, generates detailed answers through the specificity of the stimulus given to respondents, and inspires natural responses by providing respondents with a comfortable atmosphere and helping them to approach sensitive subjects from a third-person perspective (Alexander and Becker, 1978; Barter and Renold, 1999; Wilks, 2004). This method has become firmly established in many disciplines as a data-collection instrument for clearly identifying personal judgments on moral dilemmas (Rungtusanatham et al., 2011). Certainly, scenario analysis
can be used as an effective instrument for measuring ethical judgments in an ethical decision-making framework.

Thus, this study purposed to empirically investigate the link between managers’ ethical judgment and SCM using a scenario analysis to enable managers to appreciate the value of ethical initiatives for supply chain efficiency. The specific objectives were (1) to develop appropriate scenarios involving an ethical dilemma occurring in a relationship with suppliers, (2) to determine the effect of managers’ ethical judgments on suppliers’ trust and (3) to empirically analyze the impact of trust on collaboration with suppliers. This study will broaden research on ethics in SCM by extending the analysis of managers’ ethical judgments to the supply chain, measuring their influence on the cognitive variables that affect trust, and suggesting new strategies for improving inter-organizational relationships.

2. Theoretical background and hypotheses

2.1 Ethical judgments, trust and collaboration in SCM

Ethics have been considered as one of the regulatory mechanisms that can govern inter-organizational transactions (Gundlach and Achrol, 1993; Macneil, 1983). While a stream of researchers argue that inter-organizational transactions are regulated and controlled by legal contract, some other scholars emphasize personal bonds or social norms (Macauley, 1963; Macneil, 1980). Unlike legal contracts, social norms require individuals to guide, control or regulate proper and acceptable behavior, and thereby to set limits within which individuals can seek alternative means of achieving their goals (Macneil, 1980, p. 38). Similarly, ethics serve to influence behavior according to the rules of moral philosophy (Gundlach and Murphy, 1993). As the role of contract law has become less prominent, ethics has been suggested as an important foundation for exchange development (Gundlach and Murphy, 1993).

Ethics between partner firms has been a critical issue in SCM. Firms endeavor to balance the rights and duties on stakeholders including society, employees, customers, investors and suppliers (Boone and Kurtz, 2010). However, establishing clear standards of judgment for balanced decision-making in considering all stakeholders’ positions is difficult (Boone and Kurtz, 2010). Supply chain managers who are responsible for managing intra- and inter-organizational problems often end up making unethical decisions that maximize only their personal or their firm’s benefit rather than pursuing mutually beneficial outcomes for all firms in the supply chain. Hill et al. (2009) and Drake and Schlachter (2007) found that unethical behaviors between organizations compromise the inter-organizational trust that is essential to buyer-supplier relationships. Because managers’ moral intuitions influence ethical behaviors in inter-organizational relationships (Boomer et al., 1987), the ethical decision-making process should be managed by organizations to develop and enhance collaboration with partner firms.

Many recent attempts to study issues such as ethical judgment, ethical intention and ethical behavior have been based on ethical decision-making frameworks (Schweiker and Schultz, 2013). Marketing studies for example have taken an ethical-judgment or behavioral-intention perspective, both of which are perceived as critical elements in ethical decision-making (Jones, 1991). In the SCM literature, ethical decision-making has been discussed as a critical antecedent to performance enhancement. Wisner et al. (2012) explain that ethical purchasing refers to purchasing from firms that protect or consider the weak in society (including SMEs). They further suggest that sustainability in the supply chain is related to environmental issues, social responsibility and financial performance. Burt et al. (2010) emphasize ethical standards for supplier selection and ethical decision-making, the rights and responsibilities of purchasing managers, relationships with suppliers, social values and sustainability in the management of suppliers. Johnson et al. (2011) argue the importance of ethical behaviors and decision-making to the enhancement of trust in buyer-supplier relationships. Dobler and Burt (1996) emphasize that firms should provide opportunities for managers and employees to learn corporate ethical standards and, thereby, be further encouraged to accept ethical standards for their decision-making and behaviors. Although previous studies have suggested the importance of ethical decision-making in supply chains, detailed empirical studies on the process of ethical decision-making remain scarce.

In seeking to understand ethical judgments with respect to the supply chain, we need to discuss some of the ethical philosophies of supply chain managers. Reidenbach et al. (1991) claim that an individual makes ethical judgments based on several ethical perspectives including justice, relativism, deontology, utilitarianism and egoism. Some scholars, similarly, argue that no single moral philosophy can clearly explain why ethical evaluations are made, and that in fact, individuals tend to make ethical judgments based on several ethical philosophies (Reidenbach and Robin, 1988). Unethical behaviors occur in the supply chain when businesses overlook, due to relativism or utilitarianism, the value of ethics. According to relativism, widely accepted ethical rules do not exist; rather, behaviors that are practically or culturally accepted are considered right when normative faith is the standard. Utilitarianism believes that morally correct behaviors comprise acts the utility of which is high according to a cost-benefit analysis (McMahon and Harvey, 2007; Reidenbach et al., 1991). Managers’ ethical judgments are based on relativism, in the sense that unethical behaviors in the buyer-supplier relationship violate ethical standards that are shared through tacit agreements among members. Furthermore, managers’ ethical judgments are based also on utilitarianism, in that they believe their behavior to be right when it is seen to produce, for their companies, benefits that are perceived via cost-benefit analysis (Velasquez, 1988; Wisner et al., 2012). Thus, the ethical philosophies used to measure judgments’ ethical levels are the philosophical foundations on which managers’ ethics are evaluated.

Trust and collaboration in SCM have been seen as significant factors in improving supply chain performance (Barratt, 2004; Batt, 2003; Patton, 1999; Joshi and Stump, 1999). In the marketing and SCM literature, trust has been studied as an essential relational factor in successful inter-organizational transactions (Johnston et al., 2004; Mohr and Speckman, 1994; Siguaw et al., 1998). Some researchers have defined trust as an intention to rely on a partner firm based on confidence (Mayer et al., 1995; Williams, 2001).
That is, trust is a vulnerable psychological condition under which one is ready to take and accept potential risks based on positive expectations about the partners’ intentions or behaviors. Rousseau et al. (1998) assert that the willingness to accept vulnerability develops when the relationship consists of mutual and repeated interactions. Cai et al. (2010), Doney and Cannon (1997), and Zacharia et al. (2009) define trust as the expectation or belief that the partner will not engage in opportunistic behavior but will act favorably, competently and honestly. According to this view, trust between partners reflects a firm’s expectation that it will engage in fair business transactions despite the potential risks.

Supply chain collaboration is defined as joint work that generates better performance through joint planning and execution of supply chain operations by two or more independent participants (Simatupang and Sridharan, 2002). Supply chain collaboration seeks, in other words, to effectively meet, through close cooperation, end users’ needs at low costs. Through such collaboration, supply chain participants share information and resources and take risks to achieve common, mutually beneficial goals (Min et al., 2005). Studies on SCM also argue that supply chain collaboration constitutes joint efforts to redesign supply chain operations in a way that leads to better customer services and cost reduction (Hammer, 2001). Joint decision-making, joint problem-solving, benefit/cost/risk sharing, goal congruence and information sharing are the factors most frequently discussed in the SCM literature (Biggemann, 2012; Cao and Zhang, 2011; Min et al., 2005; Simatupang and Sridharan, 2002, 2005; Vereecke and Muylle, 2006).

2.2 Scenario analysis

Most studies on ethics in SCM have followed behavioral approaches to ethical and unethical behaviors, though some other studies on sales ethics, due to the difficulty of measuring ethical behaviors, have followed an ethical judgment approach instead (Reidenbach et al., 1991; Schwepker and Good, 2013; Schwepker and Ingram, 1996). Schwepker and Good (2013) argue that managers’ ethical judgments represent individual decisions about right and wrong (or ethical or unethical). Thus, it probably is necessary to take cognitive approaches to the definitions and perceptions of ethical dilemmas rather than focusing on ethical behaviors. Alexander and Becker (1978) claim that questionnaires and interviews are unreliable as methods for studying individual attitudes and behaviors, due to the high probability of self-reporting bias. Although researchers strive to measure variables that reflect reality, ambiguous questionnaire and interview questions often receive abstract answers. One alternative is to provide specific and detailed stimuli by offering, by way of scenario analysis, a certain scenario or situation. Such stimuli put respondents in situations requiring decision-making or judgment that closely reflect reality (Alexander and Becker, 1978).

Scenario analysis, also known as the vignette technique (Alexander and Becker, 1978; Barter and Renold, 1999; Finch, 1987) or scenario-based role-playing (Rungtusanatham et al., 2011), has been used to study phenomena such as attitudes, cognition, faith and norms (Finch, 1987). Scenario analysis has been used to study ethics in marketing and other disciplines (Chonko et al., 1996; Singhapakdi and Vitell, 1991). In SCM studies, it is used to examine moral dilemmas and apply scenario-based role playing techniques (Rungtusanatham et al., 2011). Some studies in ethics have illustrated decision-making situations through this method, which induces detailed responses that mirror reality (Alexander and Becker, 1978).

A scenario, or vignette, is a short story about a character in a certain situation that invites an interviewee to answer questions about it (Finch, 1987). Barter and Renold (1999) observed that scenario analysis is a technique for measuring perceptions, opinions, faith and attitudes through respondents’ answers about a certain scenario or situation. This kind of analysis can be useful in treating subjects that are difficult for respondents to discuss (Barter and Renold, 1999). Having respondents talk about a scenario can create a more comfortable and less threatening atmosphere than would be created if they were asked to speak about their personal experience (Barter and Renold, 1999). Moreover, scenario analysis is relatively effective in avoiding bias, as it uses a story about a fictional character in a fictional situation, and asks questions about what the respondent, a third party, would do (Alexander and Becker, 1978).

The scenario technique is a particularly effective means of extracting responses to questions about sensitive subjects (Barter and Renold, 1999). It is often used to measure factors such as individual judgment, subjective decision-making and beliefs related to ethical dilemmas. Previous studies, such as Kujala (2001) and Schwepker and Good (2013), used scenarios to measure ethical judgments. Indeed, the use of scenarios is common among ethical studies in the marketing field, as it helps standardize the influence of ethics in decision-making situations (Chonko et al., 1996). However, very few studies have focused on scenario analysis of ethical dilemmas in SCM.

More recently, however, SCM studies have shown more interest in scenario analysis (Rungtusanatham et al., 2011). Researchers are approaching scenario analysis as a means of understanding why and how operations managers and the supply chain form judgments, preferences and decisions about complicated subjects (Taylor, 2006). Although scenario analysis is frequently used to explore respondents’ ethical frameworks or ethical codes (Barter and Renold, 1999), its use in SCM studies is largely confined to analyses of supply chain risk, supply chain managers’ perceptions of new product development (Faure, 2009; Mantel et al., 2006) and cooperation between buying agencies and suppliers (Tangpong et al., 2010). Thus, proactive application of scenario analysis to the study of ethical decision-making in SCM seems to be required. Rungtusanatham et al. (2011) recommend using the scenario analysis for sensitive subjects such as conflicts in or breaches of psychological contracts between partners. Barter and Renold (1999) claimed that scenario analysis is effective in clearly identifying individual judgments in ethical dilemmas. In fact, because scenario analysis has been used effectively to measure the morality of sales personnel in studies on marketing ethics it should also be effective in measuring supply chain managers’ ethical judgments within ethical decision-making frameworks.
2.3 Research hypotheses

This study performed scenario analysis with the aim of identifying the impact of managers’ ethical judgments on trust and supply chain collaboration in transactions with suppliers. We developed four scenarios to represent ethical issues in the supply chain and proposed the models and hypotheses shown in Figure 1.

We posit that managers’ ethical judgments have a positive effect on trust in transactions with suppliers. Trust can be defined as the belief of one firm, based on experience, that its partner will respect its rights in ethical dilemmas (Carnevale and Wechsler, 1992). Along these lines, Hosmer (1995) describes trust as the expectation of ethical and fair behaviors. Such interpretations of trust suggest that ethical judgments in ethical dilemmas will raise a firm’s expectation that its partner will not take unexpected actions that will negatively affect it (Anderson and Narus, 1990). Thus, ethical decision-making is important in SCM as a way to build trust and maintain collaborative relationships. This view is reflected in the literature as well. Kwon and Suh (2005) observed that potential opportunism, the risk that a party may engage in opportunistic behaviors, has a negative effect on trust. Since a manager who makes ethical judgments in ethical dilemmas is less likely to exhibit opportunistic behavior, it can be assumed that a higher moral standard will improve trust between partners. Some researchers of ethical decision-making have found that mutual trust can be obtained only if business partners behave ethically (Daboub, 2002; Daboub and Calton, 2002, Piercy and Lane, 2006). Consequently, managers who make ethical judgments in ethical dilemmas will have the belief that their partners will also behave ethically and fulfill their obligations. This study therefore proposes the following hypotheses:

**H1.** Managers’ ethical judgments have a positive effect on trust in transactions with suppliers.

**H1.1.** Managers’ ethical judgments in the process of bidding and contracting have a positive effect on trust.

**Figure 1** Hypothesized relationships

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[Stage 1: Bidding/Contracting]
Ethical Judgments
Scenario 1: Bidding/Contracting

[Stage 2: Trust]

[Stage 3: Supply chain collaboration]
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3. Methodology

3.1 Scenario development and measurements

The critical issue for this study was how to measure managers’ ethical judgments in the supply chain. The three-stage scenario development and verification process suggested in Rungtusanatham et al. (2011) was adopted to create a scenario that reflects the typical ethical issues encountered in the supply chain. First, in the pre-design stage, articles from newspapers and relevant institutes were accessed to collect data on ethical judgments in the supply chain context. Second, in the design stage, scenarios were written based on the data collected during the design stage. Third, in the post-design stage, the scenarios were reviewed for clarity and missing information.

Four scenarios finally were developed through in-depth interviews with experts in the relevant fields. Scenario 1, about bidding/contracting, involves competitive bidding focused on pricing, unilateral contracting and unilateral supply price cut. Scenario 2 involves information monopoly as a method of information management and of dealing with shifting risks emerging from inventories. Scenario 3 concerns payment on notes and delayed payment. Scenario 4, about inventory management, involves unilateral inventory allocation, unilateral product discontinuation, unfair return of goods and refusal to receive ordered goods. Additional detailed scenarios are described in Table I.

This study employed a multi-dimensional ethical scale modified for the supply chain context to measure respondents’ ethical value frameworks and, thereby, evaluate their ethical judgments (Reidenbach and Robin, 1988, 1990; Reidenbach et al., 1991). The participants read four scenarios illustrating
The survey statements, drawn from work on ethical philosophy in [Reidenbach and Robin, 1988] were as follows: “a company eventually increases its profits”, “a company’s overall operational efficiency improves” and “it is helpful for a company to continue a business relationship with its partner”, as based on utilitarianism, and “it is acceptable from a practical view”, “it is acceptable if the partner does not suffer a great loss or damage”, as based on relativism. Following [McMahon and Harvey, 2007], the average was calculated by adding up the respondents’ scores on all of the items for each scenario.

In keeping with the literature, the survey identifies several trust and supply chain collaboration practices as variables. First, trust was measured by four items drawn from [Doney and Cannon, 1997] and from studies on trust in SCM (Min and Mentzer, 2004; Rinehart et al., 2004; Moberg and Speh, 2003). Trust in this study encompasses both the initial trust that each partner has in the early stages of a business transaction and the trust that develops during the partnership. Trust in the honesty of each other’s intentions and in the partner’s unique knowledge and skills are often assessed in the early stages of the relationship, representing a partner’s goodwill and competence, respectively (Doney and Cannon, 1997; Min and Mentzer, 2004; Moberg and Speh, 2003; Rinehart et al., 2004). Trust that develops during the relationship was measured as a function of respect for and willingness to accept the partner’s specialty, trust in the partner’s goodwill and expertise and trust in the partnership process (Doney and Cannon, 1997; Min and Mentzer, 2004; Moberg and Speh, 2003).

Second, supply chain collaboration was measured by six items drawn from studies on the supply chain. Joint decision-making refers to the process by which supply chain partners coordinate decisions in supply chain planning and operations that optimize supply chain benefits (Cao and Zhang, 2011; Simatupang and Sridharan, 2002). Joint problem-solving covers supply chain managers’ joint efforts to work out solutions (Min et al., 2005). Goal congruence reflects the degree of supply chain goal agreement among supply chain partners (Angeles and Nath, 2001; Cao and Zhang, 2011). Benefits and costs/risks sharing are kinds of incentive alignment that refer to the process of sharing benefits, costs and risks among supply chain members, such as in the sharing of loss on order changes or the sharing of savings.

**Table 1** Descriptions and sources of scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
<th>Relevant references</th>
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<tbody>
<tr>
<td>Scenario 1 (EJ1): Bidding/Contracting</td>
<td>Company A selects partners every year through competitive bidding, mainly focusing on price. Right after selection, it verbally decides what will be in the contract, and announces the official contract later. Even after the contract is signed, the company leaves the partner for another that offers better conditions or asks for changes in the agreement to make it similar to another. Besides, company A regularly requests supply price cut at a fixed rate when it continues the contract with the existing supplier.</td>
<td>Carter (2000a, 2000b), Hill et al. (2009), Centre of Large and Small Business Cooperation (2006, 2011a, 2011b, 2011c), Korea Fair Trade Commission (2011)</td>
</tr>
<tr>
<td>Scenario 2 (EJ2): Information management</td>
<td>Company A is provided with technological details relating to delivered goods and new product development by its partner. However, it refuses to do the same when its partner requests similar data, expressing concerns over technology and information leaks. Company A also often fails to provide data on inventories and expected sales volumes to its partner, even when the inventories from the partner are piling up.</td>
<td>Singhapakdi et al. (1996), Trevisan (1986), Centre of Large and Small Business Cooperation (2006, 2012), Cyber Support Centre for Accompanied Growth (2011), Korea Fair Trade Commission (2011)</td>
</tr>
<tr>
<td>Scenario 4 (EJ4): Inventory management</td>
<td>When company A has finished goods piling up due to a sluggish economy or poor operation, it forcefully allocates the products to its partner for sales. It also often stops producing goods that are not selling without discussing this decision with its partner. If the stock of inventory increases due to poor market conditions, it sometimes sends back or refuses to receive the goods it ordered.</td>
<td>Trevisan (1986), Cyber Support Centre for Accompanied Growth (2011)</td>
</tr>
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</table>
on reduced inventory costs (Cao and Zhang, 2011; Simatupang and Sridharan, 2005). Information sharing measures the extent to which supply chain managers share relevant information, such as inventory levels and operational data, with their supply chain partners (Simatupang and Sridharan, 2005; Vereecke and Muylle, 2006). All items were measured on a seven-point Likert scale, with 1 representing “very negative” and 7 “very positive”.

### 3.2 Data collection and analysis method

Data were collected from large companies and SMEs in South Korea belonging to one supply chain or more. Around 1,000 samples were randomly collected from those companies, which had been registered in the National Survey on Businesses 2011 conducted by the Korea Chamber of Commerce and Industry. Managers working in SCM were surveyed. Data were collected from November 19, 2012 to January 20, 2013 through questionnaires sent via e-mail or regular mail. A total of 341 questionnaires were collected out of 1,500 sent (for a response rate of 22.7 per cent). Five were excluded, as they were considered inappropriate, leaving 336 valid samples for statistical analysis. The 336 firms in the final sample represent major industrial groups in manufacturing (76.19 per cent), followed by information technology/information service (5.36 per cent), transportation (4.76 per cent) and retail (4.46 per cent). Among them, 58.33 per cent of the respondent firms had a work force of fewer than 500 employees; 11.61 per cent employed between 500 and 1,000 employees; 27.98 per cent employed more than 1,000.

### 4. Results and analysis

This study, before testing the hypotheses, tested the reliability and validity of the measurement variables using SPSS 18.0 for Windows. First, Cronbach’s alpha was used to verify the internal consistency of the measurement variables. Table II summarizes the descriptive statistics, reliability (diagonal) and coefficients for each factor. In the reliability test, the Cronbach’s alpha of trust and supply chain collaboration was 0.852 and 0.871, respectively, as seen on the diagonal of Table II, and all of the scenarios showed an alpha of above 0.7, indicating good reliability (Hair et al., 2006).

A confirmatory factor analysis was conducted to confirm the convergent validity and discriminant validity with AMOS 18.0. O’Leary-Kelly and Vokurka (1998) claimed that convergent validity and discriminant validity can be tested with the measurement model of the structural equation. The goodness-of-fit of the measurement model confirmed the following: Scenario 1 (GFI = 0.927, AGFI = 0.885, CFI = 0.948, NFI = 0.929, RMSEA = 0.085, \(X^2 = 143.439\), \(df = 42, p = 0.00\)); Scenario 2 (GFI = 0.923, AGFI = 0.880, CFI = 0.946, NFI = 0.926, RMSEA = 0.087, \(X^2 = 148.693\), \(df = 42, p = 0.00\)); Scenario 3 (GFI = 0.929, AGFI = 0.888, CFI = 0.949, NFI = 0.930, RMSEA = 0.084, \(X^2 = 140.710\), \(df = 42, p = 0.00\)); Scenario 4 (GFI = 0.930, AGFI = 0.890, CFI = 0.952, NFI = 0.932, RMSEA = 0.082, \(X^2 = 136.524\), \(df = 42, p = 0.00\)). The GFI (Goodness of Fit Index), AGFI (Adjusted GFI), CFI (comparative fit index) and NFI (normed fit index) should be 0.9 or more; the RMSEA (root mean square error of approximation) should be 0.1 or lower for goodness-of-fit. In all cases, the GFI, AGFI and NFI were 0.9 or higher (except for AGFI), and RMSEA posted lower than 0.1 (the AGFI was 0.880–0.890, very close to the recommended level). Considering the possible inconsistencies resulting from the samples’ features, the model’s goodness-of-fit was deemed acceptable. Convergent validity was also confirmed with standardized factor loadings of 0.5 or higher (Fornell and Larcker, 1981). They were also confirmed through the composite reliability (CR) and average variance extracted (AVE). The CR and AVE values for trust were 0.793 and 0.624, respectively, and those for supply chain collaboration were 0.836 and 0.540; both reliability and convergent validity were thus secured, with criteria values above 0.6 and 0.5 (Bagozzi and Yi, 1988; Fornell and Larcker, 1981). Finally, the discriminant validity of the composing concepts was examined; it was considered secured, as the square of the correlation coefficient among each factor was smaller than the AVE (Fornell and Larcker, 1981), and the square of the correlation coefficient of trust and supply chain collaboration was 0.551, slightly higher than supply chain collaboration’s AVE value of 0.540. Thus, though the discriminant variables between trust and supply chain collaboration were not fully secured, the study used the former as an antecedent variable for predictability or willingness, and the latter as an outcome variable for joint efforts in supply chain activities.

Structural equation modeling was employed, using AMOS 18.0, to test the hypotheses. Jones (1991) argued that the features of moral issues influence people’s ethical judgments. Accordingly, Schwepker and Good (2013) analyzed their structural model by dividing it into three different scenarios. Similarly, this study conducted its structural equation modeling by dividing each scenario into four separate models.

### Table II Descriptive statistics and inter-correlation matrix of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean value</th>
<th>SD</th>
<th>EJ1</th>
<th>EJ2</th>
<th>EJ3</th>
<th>EJ4</th>
<th>Trust</th>
<th>Supply chain collaboration</th>
</tr>
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<tbody>
<tr>
<td>EJ1</td>
<td>4.384</td>
<td>1.295</td>
<td>(0.867)</td>
<td>(0.865)</td>
<td></td>
<td></td>
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<tr>
<td>EJ2</td>
<td>4.681</td>
<td>1.172</td>
<td>0.672**</td>
<td></td>
<td>(0.859)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EJ3</td>
<td>4.771</td>
<td>1.209</td>
<td>0.434**</td>
<td>0.539**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EJ4</td>
<td>5.047</td>
<td>1.140</td>
<td>0.543**</td>
<td>0.638**</td>
<td>0.586**</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Trust</td>
<td>5.096</td>
<td>1.051</td>
<td>0.155**</td>
<td>0.218**</td>
<td>0.099</td>
<td>0.182**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply chain collaboration</td>
<td>5.230</td>
<td>0.879</td>
<td>0.123*</td>
<td>0.179**</td>
<td>0.128*</td>
<td>0.235**</td>
<td>0.758**</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p < 0.05; ** p < 0.01; the parentheses on the diagonal are the Cronbach’s alphas; Ethical Judgments: EJ1-Scenario 1; EJ2-Scenario 2; EJ3-Scenario 3; EJ4-Scenario 4
Table III shows the results of the structural equation modeling for the proposed study model, which, as indicated, exhibited acceptable goodness-of-fit. The fact that the same results accrued from most of the scenarios indicates that the model was consistent even across the different ethical supply chains. In the tests for H1 (regarding the relation between the manager’s ethical judgments and trust), Scenario 1 (beta = 0.164, p < 0.05), Scenario 2 (beta = 0.226, p < 0.05) and Scenario 4 (beta = 0.209, p < 0.05) were accepted, whereas Scenario 3 was dismissed at the 5 per cent level. Thus, the first three hypotheses (H1.1 to H1.4, except H1.3) were significant at a reliability level of 95 per cent. A higher level of ethical judgment displayed in an ethical dilemma faced by a manager leads to a stronger intention to rely on each other: the manager’s ethical judgment turned out to be the antecedent variable that promoted faith in and an expectation of fair behavior from the partner company. H2 (on the relation between trust and supply chain collaboration) subsequently was tested for each scenario. As expected, Scenario 1 (beta = 0.869, p < 0.05), Scenario 2 (beta = 0.868, p < 0.05), Scenario 3 (beta = 0.870, p < 0.05) and Scenario 4 (beta = 0.872, p < 0.05) were all accepted, which indicated that H2.1 to H2.4 were significant at a 95 per cent reliability level. This also demonstrated that trust is the antecedent variable that improves supply chain collaboration: that is, a high level of trust has a good chance of leading to successful supply chain collaboration.

5. Discussion

This paper examined how managers make ethical judgments when faced with ethical dilemmas in the supply chain, and analyzed how those ethical judgments affect trust in buyer-supplier relationships. We found that a high level of ethical judgment among working-level personnel in a supply chain enhances trust between buyers and suppliers, except for payment situations. Moreover, this study found a positive linkage between trust and supply chain collaboration, as in Kwon and Suh (2005), which signifies that the buyer-supplier relationship continues to be based on trust when supply chain managers’ ethical judgment level is high, ultimately leading to joint efforts in supply chain activities. This result confirms that the ethical judgments of boundary-spanning personnel, frequently analyzed in the sales management literature (Schweiker and Good, 2013), also influence relationship performance in the supply chain. In ethical dilemmas faced by working-level personnel concerning bidding/contracting, information management and inventory management, a higher level of ethical judgment encourages the expectation that the business partner will behave ethically and fairly, which ultimately leads to greater trust.

While prior literature has introduced significant antecedents of inter-organizational trust such as boundary spanning capabilities of buying agencies (Zhang et al., 2011), efficient communication (Hsu et al., 2008; Morgan and Hunt, 1994) and sharing information technologies (Fawcett et al., 2007; Frasquet et al., 2008; Rysel et al., 2004), the current research extends the area to the comprehensive understanding of ethical judgment by boundary-spanning personnel. This research suggests that it – in line with the social requirement of ethical and fair businesses – is another dimension of organizational competitiveness as it would enhance the quality of the mutual relationships between partner firms and improve the effectiveness of SCM. This paper also extends the framework of ethical decision-making in business to the level of supply chains. The research suggests that firms consider internal ethical judgments on supplying firms an important asset to be continuously nurtured and invested since a strong supply base often becomes an important asset leading to improvements their business performance in the long run (Asare et al., 2013).

One interesting finding of this study is that ethical judgments concerning payments on notes and late payments do not have any significant effect on trust. It can be inferred that perhaps trust is based initially on a partner’s reputation or past performance (McKnight et al., 1998), and that because payments on notes or late payments usually occur at the end of a partnership, it can be difficult to assess a manager’s ethical judgments or behavior – or to evaluate trust – on such a basis.

The above-noted results have important implications for the buyer-supplier relationship in the supply chain. First, ethical judgments, a frequent focus in marketing management and business ethics studies, have been expanded to supply chain studies and re-interpreted as a variable of managers’ decision-making in ethical dilemmas. Studies on supply chains heretofore have focused on ethical behaviors and their consequences. But people’s ethical behavior is guided by their ethical values, which affect their ethical judgment (Hosmer, 1995); indeed, ethical judgment has been used as an outcome...
variable in many sales ethics studies, as the social desirability bias complicates the measurement of ethical behavior (Reidenbach et al., 1991; Schepker and Good, 2013; Schepker and Ingram, 1996). This study therefore extended the cognitive approach to ethical decision-making to the supply chain.

Second, this study applied scenario analysis to the measurement of ethical judgment levels using measurement items including utilitarianism and relativism. The measurement items on the multidimensional ethics scale are five ethical philosophies (deontology, utilitarianism, relativism, egoism, justice) (McMahon and Harvey, 2007). Our findings add to this by suggesting, from the SCM perspective, a specific combination: utilitarianism, relativism. Indeed, because supply chain ethics are closely concerned with the issues of collaboration and maximization of benefits, a different approach is needed. Utilitarianism, which measures morality based on the consequences of actions, and relativism, which argues that ethical rules are relative to a specific culture, both make allowances for maximization of benefits. Therefore, both philosophies can be used as a multidimensional ethics scale in SCM.

5.1 Managerial implications
This study investigated the link of ethical judgment with mutual trust between buyers and suppliers. The result provides practitioners with a valuable implication in understanding the role of ethical judgment to build successful relationships in supply chains. That is, firms need to show a high level of ethics in their supply chain decision-making for effectively engaging trust with business partners. Fair bidding/contracting, mutually beneficial negotiation, fair pricing and payment, data exchange for better inventory visibility and voluntary share of critical information – the significant factors of ethical decision-making in this study – may demonstrate the level of ethics of a firm to build trust and to continue the trust-based collaborative relationships with business partners.

This research proved that individual managers, as the boundary spanning personnel, and their ethical judgments played key roles in building trust between partnering firms in the supply chain. Thus, firms need to focus on developing their managers’ ethics in decision-making to have them effectively solve problems in ethical dilemmas in supply chains. In doing so, more efforts should be devoted to build systems or to establish norms to promote their ethical judgments. Ethics training programs may help managers appreciate the link of ethical judgments with supply chain efficiency in the long run. Establishing ethical climate or culture within an organization may also help its managers’ inclination and ability to judge ethically in ethical dilemmas. Furthermore, appropriate rewards might be offered to the ethical judgments and personnel disadvantages might be imposed against unethical judgments and practices. These actions should reduce the risk of customary unethical behaviors in supply chain decision-making.

5.2 Limitations and future research
This study has several limitations. First, the researchers’ subjective judgments might have influenced the data selection process despite their efforts to collect objective data and select typical scenarios. It was also difficult to measure and judge the validity and appropriateness of the scenarios accurately (this study represents an early application of those scenarios to the supply chain). Future studies no doubt will enhance the validity of the scenarios and revise and supplement the measurement items.

Second, managers’ ethical judgments in the supply chain are closely related to their ethical behaviors. As studies have argued that ethical judgment is a critical antecedent of ethical behavior (Blasi, 1980), future studies should examine how managers’ ethical judgments affect ethical behaviors in the supply chain and how ethical decision-making influences SCM.

References
Ethical judgments in supply chain management: a scenario analysis
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