

## INVESTIGATING ESSENTIAL FACTORS OF RESELLER PERCEIVED INEQUITY AND RESELLER PERFORMANCE IN E-BUSINESS

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### ABSTRACT

The increased use of technology in e-business is transforming the way manufacturers manage their relationships with resellers to make their work more efficient and effective. This study examines the impacts of technology-related factors and relationship management factors on reseller perceived inequity and reseller performance. The two technology-related factors investigated in this study are reseller ordering benefits and customer information collection capability. The two relationship management factors examined are contractual enforcement and social enforcement. A research model is developed and tested. The results suggest that all four factors have significant impacts on reseller perceived inequity. In addition, reseller ordering benefits, social enforcement, and reseller perceived inequity are significantly associated with reseller performance. This study underlines the importance of reseller perceived inequity and reseller performance in channel relationships research.

Keywords: E-Business; Customer information collection capability; Channel relationships; Reseller perceived inequity; Reseller performance.

### 1. Introduction

We live in the e-business era where virtually every business is engaged in some sort of electronic commerce to create value in terms of efficiencies or new business models. Electronic commerce sales have been growing steadily over year. According to the research firm Forrester, electronic commerce generated \$262 billion in 2013, up from \$231 Billion in 2012 (<http://visual.ly/growth-ecommerce>). As announced by the Census Bureau of the U.S. Department of Commerce, the retail electronic commerce sales for the first quarter of 2014 was \$71.2 billion, with an increase of 2.8 percent ( $\pm 0.7\%$ ) from the fourth quarter of 2013 ([http://www.census.gov/retail/mrts/www/data/pdf/ec\\_current.pdf](http://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf)).

In this e-business era, companies that want to be competitive should better be involved in business to business (B2B) electronic commerce [Standing and Lin 2007]. Among different types of businesses, business-to-business (B2B) market is considered as the largest one and has been growing rapidly in recent years. Compared with business-to-consumer (B2C) and consumer-to-consumer (C2C), B2B has a much larger market share [Schneider 2012]. As reported in 2011, 53% of the total of 5.93 million businesses in the United States were engaged in some kinds of B2B activities; in addition, US wholesalers generated over \$5 trillion in sales and made \$1.2 million in purchases (<http://www.businessvibes.com/blog/size-b2b-market-united-states>). B2B electronic commerce is practiced via different forms of interorganizational systems that have become fundamental to business operations to many firms [Chi et al 2007]. Among various interorganizational relationships of B2B electronic commerce, a large and essential

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form is the one between manufacturers and their resellers. In this study, we focus on examining this type of relationships.

The rapid development and increased advancement in information technology has enabled modern companies to manage the manufacturer-reseller relationships more efficiently and effectively. As emphasized by researchers, “interorganizational systems employing information technology may be the most important technological breakthrough in channels of distribution since air transport” [O’Callaghan et al. 1992, p. 45]. Major manufacturers such as Caterpillar, Renault and HP are using Web-based Partner Relationship Management (PRM) software to manage and coordinate thousands of their resellers around the world. Cisco manages around 55,000 of its resellers and channel partners via PRM tools and derives about 80% of revenue through this indirect channel [Storey and Kocabasoglu-Hillmer 2013]. Such software is commonly referred to as e-business tools [Chakravorti et al 2015; Chen and Holsapple 2013; Lee et al. 2011; Mirani et al 2001], and is designed to automate the existing business processes such as ordering, technical support, communication, lead sharing and coordination of promotional activities [Liu et al 2015; Chen and Holsapple 2013; Theodosiou and Katsikea 2012]. While companies report increased efficiency as a result of using PRM tools [Chakravorti et al 2015], some Amazon’s marketplace partners view the inherent transparency of online partnerships as detrimental to the ‘junior’ partners. They accuse Amazon of monitoring the partners’ sales closely and competing directly and unfairly with their partners on the successful products in the marketplace [Wall Street Journal 2012].

Among different processes involved in the manufacturer-reseller relationships, one of the most important processes is the enforcement process [Wu and Wu 2015; Heide 1994]. Previous research has identified two types of enforcement process, contractual enforcement [Johnson and Sohi 2015; Griffith and Zhao 2015; Gilliland, Bello and Gundlach 2010; Antia and Frazier 2001] and social, self-enforcement or norm-based enforcement [Wu and Wu 2015; Gilliland, Bello and Gundlach 2010; Heide 1994], both of which are considered as relationship management factors. Firms that rely on formal contracts to manage relationships are engaged in contractual enforcement, whereas firms that rely on social norms (such as keeping promises, and aligning goals and reciprocity, etc.) are engaged in social enforcement. While assessing the impact of information technology on manufacturer-reseller relationships has important implications to modern companies, it is also critical to examine how different types of enforcement can influence those relationships.

Existing literature has examined influencing factors on e-business technology adoption [Liu et al 2015; Chen and Holsapple 2013; Osmonbekov 20010; Srinivasan et al. 2002; Wu et al. 2003] and the potential efficiency benefits of e-business tools [Storey and Kocabasoglu-Hillmer 2013; Theodosiou and Katsikea 2012; Osmonbekov et al. 2009; Bello et al. 2002; Mirani et al. 2001] in the context of distribution channels. Previous relationship management research mainly focused on either the contractual enforcement [Johnson and Sohi 2015; Griffith and Zhao 2015; Gilliland et al 2010; Antia and Frazier 2001] or social enforcement [Wu and Wu 2015; Kaufmann and Stern 1992]. Little research has studied both types of enforcements in manufacturer-reseller relationships [Gilliland et al 2010]. In addition, previous studies also have emphasized the important role of the equity perception on manufacturer-reseller relationships [Hingley et al. 2015; Guo 2015; Frazier 1983; Kumar et al. 1995; Scheer et al. 2003]. However, several important questions remain to be studied and answered. Specifically, the research questions that this study aims to address are:

- How can the benefits brought by information technology influence reseller inequity perception and performance?
- How can contractual and social enforcement influence reseller inequity perception and performance, respectively?
- Should both information technology and enforcement variables be examined jointly or could they stand on their own?

To address these research questions, this study develops and tests a theoretical model to examine the impacts both technology-related factors (i.e., reseller ordering benefits and customer information collection capability) and relationship management factors (i.e., contractual enforcement and social enforcement) on reseller perceived inequity as well as reseller performance. This study highlights the importance of considering both technology-related factors and relationship management factors in understanding resellers’ perceived inequity and their performance in B2B electronic commerce. This study contributes to both technology adoption in the buyer-seller relationships research [Liu et al. 2015; Chen and Holsapple 2013; Theodosiou and Katsikea 2012; Srinivasan et al. 2002] and relationship marketing literature [Hingley et al 2015; Guo 2015; Kumar et al. 1995; Scheer et al. 2003; Morgan and Hunt 1994; Heide 1994]. While the technology adoption literature typically focuses on investigating the effect of new technology on firm performance and the relationship marketing literature mainly focuses on the firm’s efforts to form effective

relationship management mechanisms to improve performance, this study incorporates both perspectives to provide a more holistic view.

The remainder of this paper is organized as follows. The next section reviews related literature on equity theory, technology use in e-business, and relationship enforcement. After that, the research model and hypotheses are developed. Detailed results of the large-scale study for model testing are then presented. The paper concludes with discussions on research contributions, practical managerial implications, and limitations and future research directions.

## 2. Related Literature

### 2.1. Equity Theory

Equity theory deals with the norm of distributive justice in dyadic relationships and reflects the desire of members of a dyad to have a fair distribution of benefits in a dyadic relationship [Adams 1963; Huppertz et al. 1978]. First introduced by Adams (1963), the theory explores conditions for the existence of equitable versus inequitable dyadic exchanges. An equitable relationship is conceptualized as one where both parties perceive that each receives the benefits that are commensurate with the investments made by each party into the relationship. On the other hand, if either party views that the other party receiving benefits that are not commensurate with the investments made, an inequitable relationship is in place. In the latter case, as Adams (1963) suggests, the party that perceives the relationship as inequitable (or unjust) is likely to act to restore the equity by: (1) lowering investments into the relationship, (2) trying to extract more benefits from the relationship, (3) trying to lower the benefits of the other party, or (4) withdrawing from the relationship altogether. Among them, lowering investments into the relationship is probably the easiest way to deal with inequity. Psychological experiments showed that workers in a company that perceived their relationship with the company as inequitable would become less efficient (Adams 1963). As suggest by Adams (1963), “the need to establish equity was a more potent motivation than the motivation to maximize monetary gains” (p.286). Equity theory has been applied by Huppertz et al. (1978) in the context of retail exchange to examine inequity perceptions and consumers’ intention to resolve inequity. Consistent with predictions of equity theory, the study found that in situations of high inequity consumers would try to restore the balance by increasing benefits (such as complaining to the manager or even shoplifting items) or withdrawing from the relationship (such as leaving the store without buying and shopping elsewhere) [Huppertz et al. 1978].

In the context of business-to-business relationships, previous research suggested that high inequity had a negative impact on satisfaction, and a higher level of equity concerns could be found in situations where a firm had more alternative partners to choose from [Frazier 1983]. Firms in business relationships that were perceived equitable tended to have more trust among each other, with less conflicts and higher commitment to their relationships [Kumar, Scheer and Steenkamp 1995]. In addition, those firms would be more willing to invest in the relationships with the expectation to continue the relationship [Scheer et al. 2003]. Similar findings are provided in the context of strategic alliances; for example, Luo [2007] found that equity perceptions of partners could lead to higher performance of an alliance. Equity perceptions were also found to significantly improve knowledge sharing, investment into the relationship, and commitment in buyer-seller relationships [Liu et al. 2012]. More recently, equity perceptions were found to reduce partner strong form opportunism (i.e., violations of specific agreements), but did not significantly relate to the weak form of opportunism [Luo et al. 2015].

Prior research in distribution channels has examined inequity in two levels, including the perceived overall inequity in a business relationship and the perceived issue-specific inequity about certain arrangements and programs in the relationship [Kumar et al. 1995]. In this study, we focus on the issue-specific inequity. Specifically, resellers’ perceptions on the issue-specific inequity about e-business arrangements with a manufacturer are examined. In the context of e-business arrangements, it is important to study perceptions of inequity since changes in business processes usually force channel members to reevaluate their existing relationships. Both parties (i.e., the manufacturer and the reseller) will then provide inputs into the arrangement and expect to gain certain benefits that will be equitably distributed. Therefore, we define reseller perceived inequity as the degree to which the reseller perceives that the benefits it has gained from the e-business arrangement between it and the manufacturer are not fairly shared. In other words, it means the degree to which benefits are unfairly appropriated by the manufacturer in the relationships of the e-business arrangements as perceived by the reseller.

### 2.2. Technology Use in Distribution Channels

The bond between manufacturers and their resellers in e-business has become closer in modern distribution channels. One important type of usage of e-business tools in the channel context is to provide shared resources that are owned and maintained by the manufacturer and also can be used by the downstream channel members [Storey and Kocabasoglu-Hillmer 2013; Boyd and Spekman 2004]. Those resources can provide benefits to both parties in the dyad, such as increased efficiency. For instance, increased efficiency of tracking shipments and reduced handling of paper documents through their digitization improves overall efficiency of both manufacturer and reseller [Bello et al.

2002]. However, benefits brought by those resources may also lead to potential disproportionate distribution of benefits toward one party in the relationship [Bello et al. 2002]. This may happen due to the ability of one party to appropriate a larger share of benefits through greater negotiating power [Gaski 1984] or through specific design of the technology [Storey and Kocabasoglu-Hillmer 2013; O'Callaghan et al. 1992].

Previous research has examined either antecedents [Chen and Holsapple 2013; O'Callaghan et al 1992; Srinivasan et al 2002; Osmonbekov 2010] or consequences [Storey and Kocabasoglu-Hillmer 2013; Konsynski 1993; Mirani et al. 2001; Bello et al. 2002; Osmonbekov et al. 2009; Lee et al. 2011] of technology adoption in the channels of distribution. A couple of studies examined both antecedents and consequences of technology adoption [Theodosiou and Katsikea 2012; Wu et al. 2003]. For example, O'Callaghan et al. (1992) found that expected efficiency gain and service gain had a significant impact on the adoption of technology in distribution channels. Similarly, Osmonbekov (2010) found significant impacts of reseller efficiency benefits on usage of technology, and relationship technology fit and manufacturer social influence on usage of e-business tools by resellers. Srinivasan et al (2003) found that technological opportunism, institutional pressures and perceived usefulness of e-business technology significantly influenced adoption decision. Additionally, Wu et al. (2003) found that top management emphasis and customer power significantly affected technology use. On the outcomes side, Wu et al (2003) found significant relationships between technology use and efficiency, sales performance and relationship strength and length. Meanwhile, Osmonbekov et al. (2009) found that e-business usage significantly impacted coordination between manufacturers and resellers but increased the conflict between them. Similarly, the various technological capabilities embedded in the e-business tools were found to have differential impacts on relationship variables of trust, relationship commitment and customer satisfaction [Storey and Kocabasoglu-Hillmer 2013].

### 2.3. Relationship Enforcement

Channel governance theorists postulate that different channel relationships exhibit different governance processes that define and serve in management of those relationships [Heide 1994]. Among different types of processes in channel relationship management, an important and critical one is the enforcement process – that is the process by which the agreements between parties in the channel are enforced. As mentioned earlier, this study focuses on two types of enforcement mechanisms that have been studied in previous literature on channel governance, including the contractual enforcement and social enforcement [Frazier and Rody 1991; Gilliland et al. 2010].

Contractual enforcement describes a task-focused process whereby one party supervises the other party's performance of specific behaviors that are dictated by a formal contract [Gilliland et al. 2010]. Social enforcement is defined as the extent to which parties' shared expectations and norms serve as an enforcement mechanism in a manufacturer-reseller relationship [Gilliland et al. 2010]. Such relationship is maintained between channel members through a mutual understanding and shared values and norms. Previous research found that both contractual enforcement and social enforcement could significantly improve coordination between manufacturers and resellers and significantly reduce conflict between them [Gilliland et al. 2010].

## 3. Research Model and Hypotheses

To answer the research questions listed earlier in the paper, we developed and tested the research model as shown in Figure 1. Specifically, we aim to examine the impacts of two types of factors, technology-related and relationship management factors, on reseller perceived inequity and reseller performance. Previous research suggests that technological capabilities provided by the e-business technology may impact the buyer-seller relationship [Storey and Kocabasoglu-Hillmer 2013; Reunis et al. 2006; Hunter et al. 2004; Frazier et al. 2009]. The two technology-related factors investigated in this study are reseller ordering benefits and customer information collection capability. These two factors emerged in our interviews with the reseller firms where we asked them to describe the pros and cons of their e-business linkages with the manufacturer firms. The two relationship management factors include contractual enforcement and social enforcement. These factors were chosen because they represent bilateral and unilateral governance, the two types of governance approaches common in buyer-seller relationship management [Johnson and Sohi 2015; Griffith and Zhao 2015; Wu and Wu 2015; Gilliland et al. 2010; Antia and Frazier 2001]. We provide detailed hypothesis development as follows.

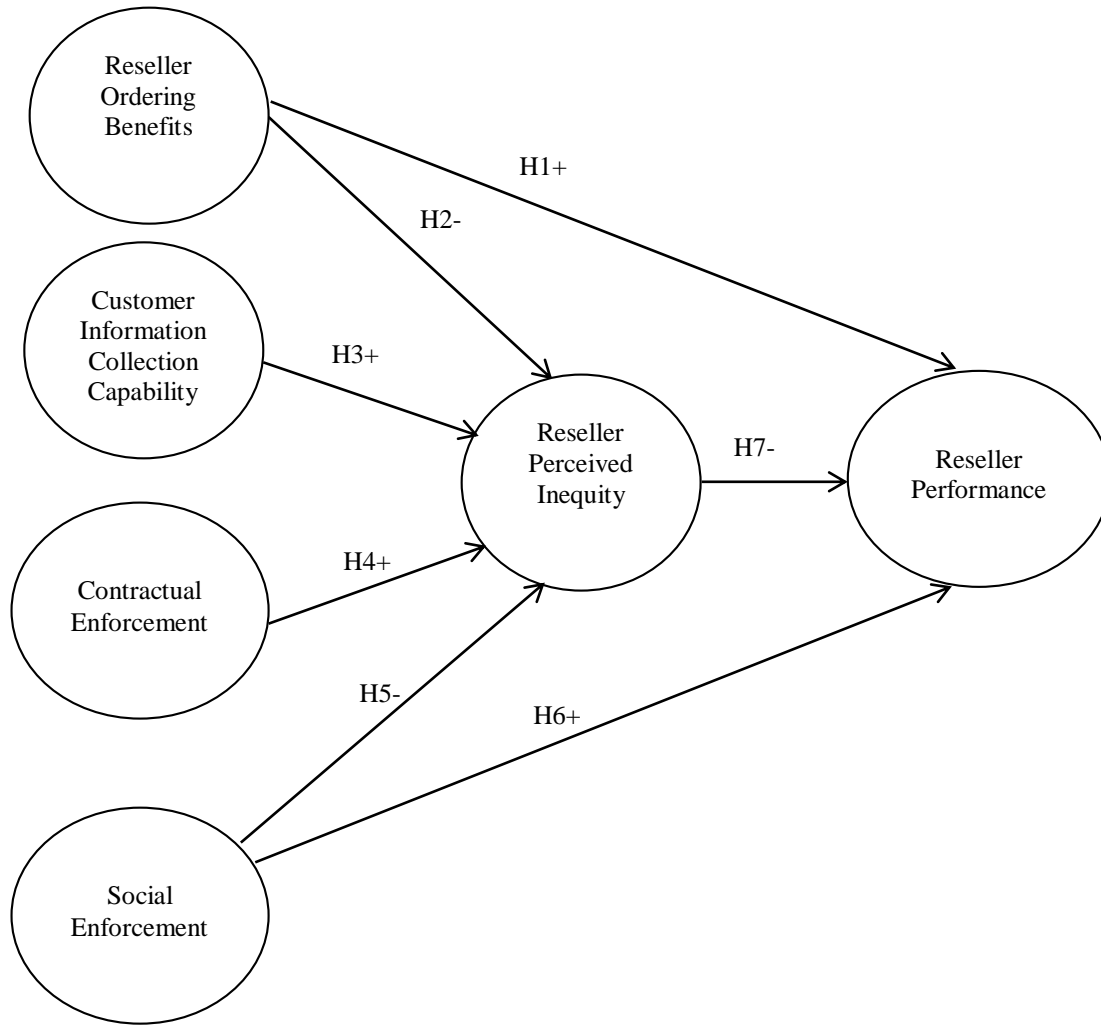


Figure 1. Research model

### 3.1. Reseller Ordering Benefits

Information technology has provided increased efficiency and effectiveness in many business processes. For example, e-business tools have made the storage and management of business documents much more efficient and effective compared with the old-fashioned, paper-based way [Hunter et al. 2004]. One type of the most important benefits brought by information technology and e-business tools are ordering benefits that are defined as the increased efficiency and effectiveness in performing activities in the ordering process [Reunis et al. 2006]. Ordering benefits typically are about the resource commitment of the time required in filling out and faxing (or telephoning) an order to the manufacturer as well as the cost of actually transmitting the order to the manufacturer [Reunis et al. 2006; Hunter et al. 2004]. With the advent of Web-based e-business tools, completing an order online requires much less time, and submitting it is almost cost-free. Compared with the paper-based way, it is much more convenient and easier to save a typical order and resubmit a previously filled-out order as a new one with minor changes. For resellers, those ordering benefits offered by e-business tools can lead to their increased performance since functions in the e-business tools can help them do their jobs faster, cheaper, and more accurate.

The ordering benefits gained by the reseller by adopting e-business tools are inextricably linked with the relationship the reseller has with the manufacturer. If the reseller perceives increased operational efficiencies in ordering via the use of e-business tools provided by the manufacturer, the reseller will tend to have positive attitudes toward the manufacturer and form a sense of getting an adequate return (i.e., efficiency increase) in despite of the time, effort and expense it has spent in learning and adopting the e-business tools. As a result, it is less likely for the reseller to perceive that the manufacturer has placed inequitable arrangements on their relationships. On the other hand, if the

reseller doesn't perceive an adequate amount of ordering benefits, it is more likely for the reseller to have a sense of inequity in its relationship with the manufacturer. Therefore, the following hypotheses are proposed:

**Hypothesis 1:** Reseller ordering benefits are positively associated with reseller performance.

**Hypothesis 2:** Reseller ordering benefits are negatively associated with reseller perceived inequity.

### 3.2. Customer Information Collection Capability

In this study, the other technology-related factor what we investigated is the customer information collection capability which refers to the ability of the manufacturer to collect, store and analyze the information about its customers by using e-business tools. This concept is similar to the external strategic information (ESI) concept as it is related to strategic information about the end users that is developed, processed, and retained by the manufacturer [Frazier et al. 2009]. Although there are different types of customer information that businesses care about [Jaworski and Kohli 1993], this study focuses on the information about customers' buying behavior toward the manufacturer' products. For the reseller, the increased customer information collection capability of the manufacturer may lead to certain concerns. For example, the reseller could face the fear of disintermediation and the manufacturer' increased ability to 'cherry-pick' and take over end-user accounts can be expected by the. The improved visibility into the end-user markets enabled by e-business tools tends to greatly benefit the manufacturer itself as it can gain an increased flexibility in its targeting channel strategies which was unavailable before. While the reseller can clearly see how the manufacturer can benefit from the increased customer information collection capability, it could doubt what return or benefits it can gain from such capability. Thus, from the reseller's perspective, the customer information collection capability of the manufacturer could benefit more toward the manufacturer in their e-business arrangement relationships, which will lead to a sense of inequity as perceived by the reseller. Therefore, the following hypothesis is advanced:

**Hypothesis 3:** Customer information collection capability is positively associated with reseller perceived inequity.

### 3.3. Contractual Enforcement

Contractual enforcement most often takes the form of unilateral enforcement, where the manufacturer (supplier) exercises their influence over the reseller by using a formal contract [Antia and Frazier, 2001]. While the use of formal contracts is generally believed to be an effective way to communicate behavioral expectations to the reseller [Gilliland et al. 2010], others suggest that there may be unintended attitudinal consequences associated with managing a business partner in such a manner [Antia and Frazier 2001]. For instance, contractual enforcement can be used to punish the reseller when it fails to comply with terms in the contracts by imposing contractually agreed fines [Gundlach 1994; Boyle et al. 1992]. The use of contractual enforcement and the disciplinary form associated with it often have been seen to cause hostility among resellers [Frazier and Rody 1991]. Thus, overreliance on the formal contract could possibly signify a transaction-oriented and adversarial relationship between the manufacturer and the reseller [Gundlach and Achrol 1993; Ferguson et al. 2005]. In addition, misuse of contracts could create tension among channel partners and harm the overall channel performance [Lusch and Brown 1996].

From the reseller's perspective, contractual enforcement is often treated as a coercive method in which the manufacturer has more control [Frazier and Rody 1991]. Reseller compliance under such influence may signal that its behavior could be in conflict with its own goals [Gilliland et al. 2010]. Thus, the reseller could form a sense of inequity in its relationships with the manufacturer. Therefore, the following hypothesis is proposed:

**Hypothesis 4:** Contractual enforcement is positively associated with reseller perceived inequity.

### 3.4. Social Enforcement

According to Heide [1994], firms may establish and share common values that direct their behaviors in a certain way. These shared norms assist companies in deciding on behaviors that are appropriate for certain situations. If firms share a common set of norms any behavior that is consistent with those norms will be well-received by both sides of a relationship dyad [Schein 1985]. Such common values are often referred to as 'relational norms' [Heide and John 1992] and may be indicative of bilateral governance in a relationship. Heide [1994] notes bilateral means of enforcement as "designed to achieve compliance by means of making certain behaviors desirable or undesirable." (p. 78). Social enforcement, as a bilateral means of enforcement, also could be described as self-enforcement because parties in the relationship rely on existing social norms to guide their behaviors.

In e-business arrangements, perceptions of inequity can play an important role since it can help force channel members to reevaluate existing relationships and make modification if needed. Both the manufacturer and reseller can

provide inputs into the arrangements and expect to gain certain benefits that would be equitably distributed. During this process, sharing common norms can help each party in the dyad (i.e., the manufacturer and the reseller) to understand its responsibilities and act accordingly. Social enforcement emphasizes that channel members need to keep their promises, work together to solve problems, and be sensitive to each other's needs [Gilliland et al. 2010]. Thus, if a strong social enforcement exists between the manufacturer and the reseller, it is not likely for the reseller to perceive inequity in its relationship with the manufacturer. Therefore, the following hypothesis is proposed:

**Hypothesis 5:** Social enforcement is negatively associated with reseller perceived inequity.

Social governance is founded on the common values that exist between channel partners, which is the basis for developing flexibility, tolerance, and other factors that guide the relationship. The social nature of the exchange is particularly important to the evolution of the relationship among channel members. Lusch and Brown [1996] found that the informal nature of contracts – sometimes referred to as “soft contracts” – allowed the relationship to change in response to external challenges. Expectations from the “soft contracts” eventually will stabilize and represent the implicit understanding that channel members adopt to guide one another's behavior. Social governance relies on established patterns in the relationship to guide channel members' behavior [Gilliland and Manning 2002]. When facing obstacles, social governance reinforces the relationship among channel members by increasing their communication and information sharing. Thus, mutual solutions can be found efficiently and agreed on since the goals and intentions are transparent to each other and both sides (i.e., the manufacturer and reseller) in the relationship tend to be willing to make adjustment in order to maintain the shared values that have been established.

Using shared values to enforce a contract can make a positive impact on the relationship between the manufacturer and reseller, and ultimately lead to the increase in the reseller's performance of selling the manufacturer's products. It has been found that when values are shared by channel members, an anticipation of fairness in the long run is created [Ouchi 1979; Black 1998]. Such expectation of fairness can make the reseller feel its effort is not wasted by creating a sense of confidence, and thus becoming a motivating force for the reseller to focus on selling the manufacturer's products [Gilliland et al. 2010]. Additionally, social enforcement enables an interconnectedness of values that bond firms such that they are more likely to behave in a manner that is conducive to the performance of the relationship [Seeck and Kantola 2009]. Therefore, it can be expected that social enforcement can have a positive impact on the reseller's performance. Thus, the following hypothesis is proposed:

**Hypothesis 6:** Social enforcement is positively associated with reseller performance.

As suggested by the equity theory, when a perceived inequity exists (i.e., when there is an imbalance between contributions to and benefits from the relationship among different parties in the channel), the focal party will try to act to remedy the situation and bring it to equilibrium [Frazier 1983; Adams 1963]. To move toward equilibrium, the party may either withdraw its contributions to the relationship or try to extract more rewards from it. The latter is less likely to happen on the reseller in its e-business arrangements with the manufacturer, since the manufacturer mostly controls the design, implementation, and adoption of the e-business tools for its resellers. Previous research on perceived inequity in channel relationships suggests that relationship quality suffers as a result of a high level of perceived inequity [Kumar et al. 1995], which could lead to distrust and even hostility among resellers [Scheer et al. 2003]. Therefore, if a reseller perceives that its benefits of using the Web-based e-business tools as provided by its manufacturer are inequitable (i.e., the manufacturer has gained the dominant amount of benefits), it is likely that the reseller will refuse or stop to use the e-business tools, leading to the consequences of reduced performance. Therefore, the following hypothesis is proposed:

**Hypothesis 7:** Reseller perceived inequity is negatively associated with reseller performance.

#### 4. Methodology

##### Large-Scale Study

##### 4.1. Measures

The measures (see Table 1) for reseller ordering benefits and customer information collection capability were developed following guidelines suggested by Churchill (1979). 24 items were first developed reflecting various functionality of the e-business tools. A pretest was then conducted using a sample of 29 reseller representatives, mostly sales and purchasing managers that were familiar with the e-business tools and used them on the everyday basis. Based on the results of the pretest, we followed up with the respondents with clarification questions that were used to condense the number of measures to 22.

The measures for contractual enforcement and social enforcement were derived from Heide's (1994) conceptualization of mutuality of interest enforcement mechanism and adopted from previous empirical research in distribution channels [Gilliland et al. 2010]. The measures for reseller perceived inequity were adapted from Oliver and Swan (1989). Wording changes were made to fit the context of e-business arrangements in this study. The measures about reseller performance were adapted from Kumar et al. (1992) with a focus on the reseller-manufacturer relationship. All measures used in the study are listed in Table 1.

Table 1. Measurement Items (Anchored by "Strongly Disagree" and "Strongly Agree" unless noted otherwise)

Construct and Items	Mean	SD	Loading
<b>Customer Information Collection Capability (<math>\rho=.88</math>, <math>VE=.72</math>)</b>			
<i>With E-business tools the manufacturer...</i> (anchored by "Not at all" and "Very Much")			
Collects information on specific end-user order flow	3.94	1.95	0.87
Collects information about end-user locations	3.87	2.06	0.86
Observes end-user shipping preferences	3.67	2.04	0.80
<b>Reseller Ordering Benefits (<math>\rho=.97</math>, <math>VE=.92</math>)</b>			
<i>With e-business tools we...</i> (anchored by "Not at all" and "Very Much")			
Reduce time of order submission to this manufacturer	4.55	2.02	0.96
Reduce our costs of order submission	4.33	1.99	0.95
Make our ordering process more efficient	4.55	2.01	0.96
<b>Contractual Enforcement (<math>\rho=.92</math> <math>VE=.75</math>)</b>			
This manufacturer relies on our agreement, where it applies, to resolve disagreements with us	3.60	1.80	0.82
This manufacturer refers to our agreement when attempting to influence us	3.77	1.90	0.87
This manufacturer refers to portions of our agreement to gain our compliance on a particular request	3.70	1.87	0.94
This manufacturer makes it clear that we are to conform to our agreement, should differences arise between us	3.87	1.92	0.84
<b>Social Enforcement (<math>\rho=.94</math>, <math>VE=.72</math>)</b>			
<i>For both parties in this relationship it is expected that...</i>			
We keep our promises to each other because we value our partnership	5.55	1.49	0.88
Our shared expectations serve to enforce our business agreements	5.29	1.49	0.89
The strength of our relationship will keep the parties honest in dealing with each other	5.26	1.59	0.90
Both sides are willing to make cooperative changes when differences arise	4.96	1.62	0.72
Each party fulfills its responsibilities because the other party expects it	5.03	1.53	0.77
<b>Reseller Perceived Inequity (<math>\rho=.84</math>, <math>VE=.63</math>)</b>			
The manufacturer gains the most from the transition to online operations	3.36	1.47	0.80
The benefits of the online operations unfairly favor the manufacturer	3.69	1.64	0.80
The manufacturer does not share the benefits of online operations equitably	3.62	1.61	0.78
<b>Reseller Performance (<math>\rho=.93</math>, <math>VE=.76</math>) (anchored by "Not at all" and "Very Well")</b>			
<i>How well do you accomplish your economic goals reselling this manufacturer's products?</i>			
Sales goals.	4.86	1.26	0.91
Profit goals	4.60	1.41	0.83
Growth goals	4.52	1.31	0.91
Market share goals	4.28	1.31	0.83



#### 4.2. Data Collection

The sampling frame was 2 lists purchased from publishers of trade journals and other business information. From the lists, computer and computer network components resellers were selected for this study because this industry is more likely to employ and understand e-business tools than other industries. A total of 4,342 executives from computer integrator and VAR companies (SIC 7373) were targeted. After clearing this list (including the removal of duplicates, firms that had gone out of business, merged companies, and misclassified companies) there were approximately 1,700 usable executive candidates. We contacted them by phone to ensure that their companies were in computer and network components resell business and were using e-business tools with their manufacturers. The respondent's e-mail address was obtained and each was sent a link to the web survey with the appropriate instructions and a respondent password. 614 executives qualified for the study and agreed to participate in the survey. In total, 224 responses were received constituting a response rate of a little over 36%. The respondents had a fairly long relationship with the manufacturers, with an average of 9.2 years. The share of the focal manufacturers in their businesses averaged 36% of sales. The share of the overall manufacturer-reseller interactions accounted for by the Web was about 36% among all kinds of interactions, indicating the importance of Web-based tools in their manufacturer-reseller relationships.

Using a method proposed by Armstrong and Overton (1977), we assessed the impact of non-response bias. We considered the first 25 percent of respondents as early ones and the last 25 percent as late respondents. The means of all six constructs of the study were compared between the two groups and no statistically significant differences were found, suggesting that nonresponse bias was not significantly affecting the results of the study.

#### 4.3. Data Analysis and Results

The data analysis followed a standard procedure in structural equation modeling recommended by Anderson and Gerbing (1988). First, a confirmatory factor analysis with 22 items was conducted to statistically assess the discriminant and convergent validity of all 6 constructs by using Amos 5.1 software. Means, standard deviations, and correlations among those constructs are provided in Table 2.

Table 2. Means, Standard Deviations, and Correlations

	Mean	Standard Deviation	1	2	3	4	5
1. End user Intelligence	3.81	1.81					
2. Ordering benefits	4.47	1.95	.49**				
3. Social Enforcement	5.23	1.33	.11	.152*			
4. Contractual Enforcement	3.72	1.70	.29*	.178*	.10		
5. Inequity	3.55	1.36	.225**	-.07	-.18*	.18*	
6. Performance	4.66	1.22	.11	.23**	.29**	-.06	-.27**

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

N=224

The parameters are estimated using the maximum likelihood estimation technique. The results demonstrate that the measurement model provides a reasonable fit for the data. Positive diagnostics of the model include Chi-square of 450.81 with 237 df, comparative fit index (CFI) of .95, a parsimony normed fit index of (PNFI) of .71. The root mean square error of approximation (RMSEA) is .064. The measures demonstrate adequate reliability [Hair et al. 2006] since composite scale reliabilities ( $\rho$ ) range from .84 to .94 and variance extracted (VE) ranged from .63 to .76 (See Table 1). Face validity was examined by 3 researchers in the area of study who judged the consistency between theoretical definitions of constructs and their respective measurement items. In the pretest stage, 1 item for contractual enforcement, and 1 item for inequity were eliminated, as they demonstrated low test-retest reliability. Convergent validity is evidenced by the large significant loadings ( $t$ -values  $> 2$ ) of all the 22 items on their latent constructs; discriminant validity was indicated since the confidence interval ( $\pm$  two standard errors) around the correlation estimate between any two latent constructs includes 1.0 [Anderson and Gerbing 1988].

After checking the appropriate metrics and performing additional analysis per Hair et al. (2006), it is concluded that multicollinearity is not a concern in the data. The standard errors are fairly small (not inflated), estimates did not change radically when some variables are excluded, and simple correlations are not greater than .7. Additionally, none of the eigenvalues approach zero and Variance Inflation Factors (VIFs) are within appropriate range. To check for the common method bias, we performed Harman's single-factor test [Huang 2015; Podsakoff et al. 2003]. The results suggest that common method bias is not a significant problem in this study as no one general factor emerges accounting for the majority of the covariance among the measures.

After verifying that confirmatory factor analysis model diagnostics are acceptable, we conducted the structural model specification and testing. The results are described in Table 3. The chi-square for this model is 1.754 with 2 degrees of freedom, CFI is 1.00, PNFI is .09, and RMSEA is .00. All hypotheses are significant. In detail, both paths from reseller ordering benefits are significant. As hypothesized, reseller ordering benefits positively affects reseller performance (SE=.11) and negatively affects reseller perceived inequity (SE=-.17), providing support for H1 and H2. Customer information collection capability positively impacts reseller perceived inequity (SE=.25), providing support for H3. Contractual enforcement has a positive impact on reseller perceived inequity (SE=.14) which provides support for H4. The two paths from social enforcement are also significant. Social enforcement negatively impacts reseller perceived inequity (SE=-.20) and positively impacts reseller performance (SE=.21), providing support for H5 and H6. H7 is also supported as we find a significant negative relationship between reseller perceived inequity and reseller performance (SE=-.18).

Table 3. Structural Model Statistics and Standardized Path Coefficients

Measure	Path Coefficient
$\chi^2$	1.754
<i>Df</i>	2
End User Intelligence → Perceived Inequity	.25***
Ordering Efficiency → Perceived Inequity	-.17**
Ordering Efficiency → Performance	.11**
Social Enforcement → Performance	.21***
Social Enforcement → Perceived Inequity	-.20**
Contractual Enforcement → Perceived Inequity	.14*
Perceived Inequity → Performance	-.18**

\* p<.05. \*\*p<.01. \*\*\*p<.001

## 5. Discussion

### 5.1. Research Contributions

The primary contribution of this research stems from an examination of both technology-related and relationship factors on the reseller economic performance. Our findings suggest that it is critical to focus on both aspects of a modern distribution channel relationship to enhance the reseller and therefore the relationship performance. The two technology-related factors examined in this study, reseller ordering benefits and customer information collection capability, have significant impacts, directly and indirectly, on reseller performance. The two relationship governance factors examined in this study, contractual enforcement and social enforcement, have significant impacts, directly and indirectly, on the reseller performance. Our findings support the notion that information technology plays a strategic role in long term buyer-seller relationships [Makkonen and Johnston 2014] and that examining both technological capabilities and governance mechanisms together may yield novel insights [Storey and Kocabasoglu-Hillmer 2013]. More broadly, our approach of studying relationship and technology variables simultaneously may provide a framework for future research of technology impacts on any dyadic relationships.

On the technology side, the findings support the thesis that e-business arrangements could be a double edged sword for resellers. On one hand, resellers may benefit from more efficient electronic interactions, as we find that ordering efficiency has a direct impact on reseller performance and improves perceptions of equitable distribution of the technology's benefits. On the other hand, they may disclose strategic information to the manufacturer, such as strategic information about end-user accounts. We find that manufacturer's end-user intelligence gathering enabled by technology leads to increased perceptions of inequity by reseller. This finding suggests that resellers may be concerned about manufacturer opportunistic behavior based on the increased informational awareness of the marketplace. As manufacturers are reaping these additional benefits from the transition to the e-business operations,

resellers perceived inequity about the e-business arrangements increase. Such perceived inequity may poison the relationship and to restore the equity balance, resellers may withdraw from the relationship and the performance suffers the consequences of such withdrawal. Our findings support previous research about the possible “dark side” of deploying e-business tools in manufacturer-reseller relationships. Previous studies found that the fulfillment capability of PRM systems had a negative impact on relationship commitment [Storey and Kocabasoglu-Hillmer 2013], and certain functionalities of e-business tools could lead to more conflicts between manufacturers and resellers [Osmonbekov et al. 2009].

On the relationship governance side, our study findings support the differential impacts of contractual and social enforcement on relationship performance. The significant relationship between social enforcement and performance lends empirical support to the theoretical proposition regarding the manner in which resellers are likely to experience this type of governance. Specifically, social enforcement is thought to positively influence relationship performance by creating the long-run sense of equity, open communication, transparency, and shared values that are likely to motivate resellers to sell a supplier’s products. On the other hand, contractual enforcement exacerbates the perceived inequity and, indirectly leads to the diminished reseller performance. The mechanism of this indirect impact is the same as in the case of the end-user intelligence impact. The more the manufacturer uses contract in communicating with the reseller, the more likely this coercive technique results in the reseller resentment and higher perceptions of inequity with the given e-business arrangement. This, in turn, leads to the withdrawal of the reseller from the relationship and diminished performance. Our results are broadly consistent with previous studies on bilateral and unilateral governance systems [Wu and Wu 2015; Johnson and Sohi 2015; Griffith and Zhao 2015; Gilliland et al. 2010] on advisability of using bilateral over unilateral systems. Our contribution in this area is mainly in connecting these systems directly to the economic performance of a firm.

An interesting question to examine is which set of factors, relationship enforcement or technological capabilities, are more important in explaining inequity and performance variables? We performed additional analysis using our existing data to empirically answer this important question. Specifically, we performed analysis on 3 different models: 1. our existing model, 2. a model with enforcement constructs only as exogenous variables, and 3. a model with technological capabilities only as exogenous variables. We compared squared multiple correlations (SMRs), indicating variance explained, for inequity and performance constructs across the 3 models. For the existing model, SMRs are .164 and .166 for inequity and performance, respectively. For the enforcement only model, SMRs are .073 and .133; for the technological capabilities model, SMRs are .107 and .11. Based on the results, the existing model outperforms the other two, indicating that it is important to look at both types of factors simultaneously. When comparing models 2 and 3, the results further indicate that the relationship enforcement variables may explain more in terms of the performance and the technological factors may explain more in terms of inequity perceptions.

These results underscore the importance of examining relationship alignment between the e-business partners together with the technological capabilities. Previous research rarely examines this important combination of factors, although it seems to be important from a theoretical point of view [Lee et al. 2011]. As researchers noted previously, a fairly high percentage of PRM systems may not produce positive return on investment or be considered effective [Storey and Kocabasoglu-Hillmer 2013]. The misalignment of enforcement and inequity considerations certainly may contribute to this lack of success of PRM systems in certain situations. Our empirical results lend support to the notion that the relationship governance mechanisms should be aligned with technological capabilities in order to achieve maximum effectiveness of e-business technology [Obal and Lancioni 2013; Storey and Kocabasoglu-Hillmer 2013]. Together, technological and relationship management factors explain much greater variance in the outcome variables of inequity and performance. From a practical perspective, a consensus understanding that better technology make business relationships better may not be accurate in all cases. Our findings suggest that managers also need to think about aligning enforcement (and other governance) mechanisms and consider equity perceptions of the partner, as they also have a strong impact on the ultimate performance.

## 5.2. Managerial Implications

The findings of this study provide fairly straightforward implications for practicing channel managers. They suggest that in order to make e-business relationships work managers need to focus on both technology-related and relationship factors. From the technological perspective, the efficiency effects of technology are likely to strengthen the relationship and improve the performance. On the other hand, the increased transparency and shared intelligence between partners may raise questions of opportunism and inequity with the given arrangement. The results of this study underscore that perceived inequity in sharing benefits of e-business technology may potentially be a significant obstacle to further expansion of the e-relationship. Once the problem is recognized, manufacturers could be more sensitive to the concerns of the resellers and through open communication acknowledge and address those concerns. As a practical matter, manufacturers could limit the use of certain functionalities of e-business solutions that are of

concern to resellers. For example, they could suggest not saving end-user specific information in their databases so that resellers feel more at ease.

On the relationship side, the use of social enforcement via the development of common social norms is recommended as it has a direct relationship with performance diminishes the perceived inequity with an e-business arrangement. Contractual enforcement, on the other hand, seems to increase resellers' perceptions of inequity which, in turn, is negatively related to performance. Based on these results, it would seem wise for manufacturers to train their salespeople to try to use social enforcement as opposed to contractual enforcement whenever possible. This shift might represent a substantial increase in effort on the part of the manufacturer, as the manufacturer would not be able to simply rely on the formal agreement to influence reseller behavior, but rather must attempt to develop a bond based on common values with those who work for the reseller, and use that bond to manage the relationship. Clearly, this may or may not be possible given the history of the relationship in question. However, the establishment of an e-business arrangement with a particular reseller may offer manufacturer's a new chance to reset the relationship on a more solid foundation.

Our post-hoc analysis of SMRs suggests that managers need to pay attention to both technological capabilities and relationship enforcement policies, as they both significantly affect economic performance. Technological variables have a potential disruptive impact on equity balance in a relationship, perhaps even more so than the relationship enforcement policies. Therefore, managers may only ignore them at their peril. Enforcement policies are important when it comes to the actual performance, as they may have a bigger impact on the economic performance.

### 5.3. Limitations and Future Research Directions

This study also has some limitations that future research could further address. First, the research model was tested based on resellers from the computer and computer network components industry. We chose this industry because its resellers were more likely to adopt e-business tools. The dynamics of the adoption in this industry may be unique to this industry itself. In our research setting, the resource-rich manufacturers developed and deployed the e-business tools and were the initiators of the technology adoption, with resellers being the targets of the adoption. Not all B2B relationships may share this dynamic. Therefore, future research should try to validate the model in other industries and settings. Second, during the collaboration process between the reseller and the manufacturer, the reseller performance may change over time. Thus, future research could conduct a longitudinal study to examine which factors are more influential on reseller performance in different collaboration stages. Third, future research could further extend the research model by investigating moderating effects such as reseller characteristics and the voluntariness of the use of e-business tools. In addition, this study aims at examining the relationship between the reseller and manufacturer from the reseller's perspective. Future research could also investigate the performance of the manufacturer in such relationship.

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