The Moderating Role of Perceived Regulatory Effectiveness of Online Marketplaces on the Role of Trust and Risk on Transaction Intentions

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THE MODERATING ROLE OF PERCEIVED REGULATORY EFFECTIVENESS OF ONLINE MARKETPLACES ON THE ROLE OF TRUST AND RISK ON TRANSACTION INTENTIONS

Social, Behavioral, and Organizational Aspects of Information Systems

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Abstract
Past research has widely regarded trust as unconditionally facilitating behavioral intentions, and perceived risk as unconditionally detracting from them. This study advocates the necessity to examine trust and perceived risk within the broader perspective of the societal context. We propose that the perceived regulatory effectiveness of online marketplaces moderates the impact of trust and risk on transaction intentions. First, we hypothesize that the degree to which transaction intentions are affected by their trust in the marketplace, sellers will vary in an inverted-U manner depending on how effective the buyers perceive the online marketplace regulation to be. The impact of trust on transaction intentions will increase as the buyer’s perceived regulatory effectiveness increases from low to medium levels, but it will decrease as the buyer’s perceived effectiveness increases from medium to high levels. Second, the perceived regulatory effectiveness of the online marketplace is hypothesized to reduce the impact of perceived risk on transaction intentions. These moderating effects were examined and empirically supported in the context of eBay’s and Amazon’s online auction marketplaces. Implications for integrating the perceived regulatory effectiveness of online marketplaces into existing trust and risk models are discussed.

Keywords: Perceived marketplace regulatory effectiveness, online marketplaces, trust, perceived risk.

Introduction

Trust is the willingness to be vulnerable to another party based on the expectation that this other party will behave in accordance with the trusting party’s confident expectations (Mayer et al., 1995). Past research has supported the positive effect of trust and the negative effect of perceived risk on transaction behavior. This has been supported in a variety of cases, such as buyer-seller relationships (Crosby et al., 1990; Ganesan, 1994; Kumar, 1996), e-commerce (Gefen et al., 2003; McKnight et al., 2002; Pavlou, 2002), information sharing and reduced transaction costs (Harisalo et al., 2005), sales (Johnson and Grayson, 2005), uncertainty (Gao et al., 2005), and the risk from sellers in a specific marketplace (Pavlou and Gefen, 2004; Pavlou and Gefen, 2005). Research to date has typically modeled

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1 This other party can be an individual (Blau, 1964; Larzelere and Huston, 1980), an organization (Ganesan, 1994; Gefen et al., 2003; Kumar, 1996; McKnight and Chervany, 2002), or members of a community (Fukuyama, 1995; Pavlou and Gefen, 2004).
trust as unconditionally increasing, and perceived risk as unconditionally decreasing, behavioral transactional intentions.

A primary reason why trust affects behavioral intentions is that trust reduces social uncertainty (Luhmann, 1979). Trust lets people subjectively rule out the possibility of undesirable behavior by the trusted party when there is no alternative reason to ruling out such behavior (Gefen, 2000). Social uncertainty relates to both a specific party (Gefen, 2000) as well as to a broader societal uncertainty (Fukuyama, 1995; Mayer et al., 1995).2

Trust, however, does not operate in a vacuum. It is part of the societal structure, and, as such, its effect should also depend on the characteristics of the society (Doney et al., 1998), and in particular on the way society and its markets are regulated (Fukuyama, 1995). Indeed, renowned thinkers (e.g. Adam Smith (1776), Thompson (1957), and Landes (1998)) have emphasized how market management results in economic growth and wealth due to the stability, efficiency, and social predictability these rules bring to a society’s markets and how these affect people’s willingness to participate in the marketplace.

This study integrates aspects of theory advocated by Fukuyama (1995) on governmental authority as a stabilizing force and by Luhmann (1979) about social uncertainty, and extends these theories to the realm of privately owned online marketplaces, such as eBay.com (www.ebay.com) and Amazon Auctions (www.amazon.com/auctions).

The first proposition advanced in this study is that buyers’ belief that there is effective regulation in the marketplace determines the degree to which their trust in sellers affects transaction behavior. We call this moderator perceived regulatory effectiveness of online marketplaces. The effect of buyers’ trust on transaction intentions with sellers is hypothesized to increase as their degree of perceived regulatory effectiveness of the online marketplace increases from low to moderate levels, due to the increase in social predictability such increase implies (Fukuyama, 1995). However, the effect of trust on transaction intentions is expected to decrease as the degree of perceived regulatory effectiveness becomes very strong because it reduces societal uncertainty, which is necessary to make trust necessary in the first place (Luhmann, 1979). Taken together, these hypotheses result in an inverted-U effect of trust on transaction intentions.

Second, as the buyers’ degree of perceived regulatory effectiveness of the online marketplace increases, it is also hypothesized to make perceived risk from sellers less important in determining transaction intentions.

Online marketplaces are especially relevant for examining these hypotheses because marketplace management can effectively set, monitor, and enforce the rules of appropriate conduct through their institutional IT environment (Pavlou and Gefen, 2004).3 The hypotheses were supported, challenging the apparent consensus in the literature that increased levels of trust always facilitate, while perceived risk always detracts, transaction intentions. This is the first empirical study to actually show that the impact trust and perceived risk are not uniform, and thus raise the need to consider shaping the theories of trust and perceived by adding perceived regulatory effectiveness to the theories.

**Literature Review**

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2 This inherent uncertainty is akin to Mayer et al.’s (1995) notion of perceived risk in the situation. To clarify their terminology, Mayer et al. (1995) emphasize that their definition is broader than the way perceived risk is typically defined. In their own words (p. 726): “the perception of risk involves the trustor’s belief about likelihoods of gains or losses outside of considerations that involve the relationship with the particular trustee” (Mayer et al., 1995). To avoid ambiguity, we stick to perceived risk as it is widely used, i.e. as perceived risk with the specific parties involved, rather than perceived risk at a societal level.

3 The perceived regulatory effectiveness of online marketplaces is not the same as having institutional mechanisms (e.g. escrow services, credit cards, feedback mechanisms). Perceived regulatory effectiveness is about the management of the marketplace proactively taking the initiative to regulate the marketplace and take action by themselves to prevent unacceptable transaction behavior as a way of enforcing appropriate conduct. This is different from institutional mechanisms that deal with a trusted third-party body, which may not even be part of the marketplace, that reactively responds to complaints and ex post attempts to resolve conflicts. This distinction is akin to the police patrolling the streets to prevent crime, representing regulatory effectiveness, versus the police sitting in their office doing nothing and only responding to resolve conflicts when the arguing people explicitly ask them to do so, representing institutional mechanisms as studied by previous research (Pavlou and Gefen, 2004).
Online Marketplaces

Online marketplaces, such as eBay and Amazon Auctions are communities of buyers and sellers who transact under the aegis of virtual intermediaries who provide the institutional infrastructure with the aid of Internet technologies. Online marketplaces match buyers and sellers by allowing information exchange on product and seller offerings. They also govern buyer-seller transactions by creating a regulated transaction environment. Online marketplaces create value by creating a regulatory environment in which buyers feel comfortable transacting with sellers.

The proposed emphasis on online marketplaces is warranted for testing the proposed research proposition because buyers transact almost entirely with new and unknown sellers, and the regulatory effectiveness of the management of the online marketplace is essential for creating an institutional environment that facilitates trustworthy online buyer-seller transactions (Pavlou and Gefen 2004).

Trust, Perceived Risk, and Transaction Behavior

Trust and perceived risk have been shown to determine online transactional intentions with both individual sellers (Jarvenpaa and Tractinsky, 1999) and with a community of sellers as a community (Pavlou and Gefen, 2004, 2005). Trust is the belief that a seller will behave as expected in a socially responsible manner, and, in doing so, will fulfill the buyer’s expectations without taking advantage of buyer’s vulnerabilities. When dealing with a community of sellers as a whole, trust is an overall belief of whether the community of sellers in general is composed of sellers with appropriate rules of transaction conduct and behavior (Pavlou and Gefen, 2004). Since buyers seldom interact with the same seller more than once in online marketplaces, it makes sense to assess trust in the community of sellers in general rather than in an individual seller (Pavlou and Gefen, 2004). Also, buyers generalize the trustworthiness of unknown sellers from past transactions with specific sellers to the entire community of sellers (Pavlou and Gefen, 2005). Analyzing trust in the community of sellers allows a more direct application of Fukuyama’s proposition because he views the community as his unit of analysis rather than individual entities.

Closely related, but theoretically and practically distinct, is the perception of risk in the online auction marketplace (Pavlou and Gefen, 2004). In economic exchanges, including those in online marketplaces, there is an ever-present chance of falling prey to opportunistic seller behavior and its resulting possibility of adverse transaction outcomes. Since risk is difficult to capture as an objective reality and as its degree may also be misunderstood by buyers, the literature typically deals with perceived risk, which is the subjective belief of suffering a loss in pursuit of a desired transaction outcome. In online marketplaces, if buyers perceive a high degree of risk with the community of sellers in the marketplace, they will be less inclined to transact with these sellers (Pavlou and Gefen, 2004), especially after any adverse experiences with sellers in general in a marketplace (Pavlou and Gefen, 2005). Although risk may be inevitable in online marketplaces, trust reduces perceptions of risk in online marketplaces (Pavlou and Gefen, 2004), as it does with the entire community of sellers in the marketplace (Jarvenpaa and Tractinsky, 1999).

Buyer trust is crucial in online marketplaces (Reichheld and Schefter, 2000) because buyers typically interact with sellers within a social framework which is governed by their expectations of how sellers will behave (Gefen, 2000). However, since sellers are essentially free agents whose behavior is not guaranteed, and in many cases this behavior may not even be perfectly rational to make it predictable, buyer-seller transactions are replete with social uncertainty (Gefen, 2000). To mitigate this potentially overwhelming and transaction-inhibiting uncertainty (Luhmann, 1979), buyers rely on those in authority to reactively provide recourse when sellers act opportunistically, as shown by previous research (Gefen et al., 2003; Pavlou and Gefen, 2004). Moreover, buyers should arguably also rely on those in authority to proactively create and regulate rules of transaction conduct as a means of handling social uncertainty, as theory proposes (Fukuyama, 1995; Zucker, 1986). This latter aspect of proactive regulation has not been previously examined in online marketplaces.

Thus, while trust is necessary as a subjective way of confronting the presence of social uncertainty (Luhmann, 1979), the degree of this social uncertainty is determined in part by the proactive regulation taken by those in authority (Fukuyama, 1995; Zucker, 1986). Consequently, since people only resort to trust as an alternative and less preferable way to overcome social uncertainty (Gefen, 2000), these regulatory actions should affect how important trust is in shaping behavioral intentions. Examining the moderating role of the perceived regulatory effectiveness of the management of the online marketplace – defined as the management’s effectiveness in proactively creating and regulating the marketplace’s transaction rules – is this study’s objective.
High- and Low-Trust Societies

Generally, people’s confidence in the authorities to establish and enforce appropriate rules of conduct determines whether they will or will not be willing to trust others beyond the boundary of the family and close friends, and hence how and how much commerce will be conducted among strangers (Fukuyama, 1995). When such rules are enforced, the result is increased economic activity and a greater willingness to engage in economic transactions with strangers (Fukuyama, 1995; Landes, 1998). Trusting beyond the realm of family and close friends affects whether people will openly interact with strangers, have business relationships with them, and voluntarily create associations. This level of inherent trust in strangers, which is described by Fukuyama (1995) as a national or sectarian cultural characteristic, is the result of the societal regulatory mechanisms that provide an institutional level of security and outcome guarantee to facilitates commerce.

In making his proposition, Fukuyama (1995) divided societies dichotomously (presumably for simplicity), between high-trust and low-trust cultures. Managing the rules of conduct to reduce, but not to completely eliminate, uncertainty is the hallmark of high-trust societies.

In high-trust societies, people are generally willing to engage in economic activity with strangers because the framework put in place by those in authority results in a prevailing atmosphere of trust and a willingness to transact with strangers. Consequently, in high-trust cultures, such as the USA where people have high levels of ingrained initial trust (Rotter, 1967), there is an intrinsic cultural willingness to rely on societal institutions, both governmental and private ones, to regulate transactions. This is because historically society had provided appropriate governance and intervention in the marketplace (Zucker, 1986).

In contrast, in low-trust cultures, such as southern Italy and Korea where due to historical circumstances there used to be a rationally ingrained reluctance to rely on the authorities to regulate transactions and to intervene in case of conflict, there is a reluctance to do business with strangers, and there is a higher level of inherent suspicion toward them (Fukuyama, 1995). Extending this proposition to online marketplaces, buyers will rely more on trust in sellers as the degree of their perceived regulatory effectiveness of the online marketplace increases, signifying in an analogous manner both the transition from a low-trust to a high-trust society, and also the decrease in the overall social uncertainty as their degree of perceived regulatory effectiveness of the marketplace increases.

Extending this proposition further by incorporating elements of Luhmann’s (1979) theory, a more complex picture emerges. If indeed trust is necessary to mitigate social uncertainty, as Luhmann’s (1979) explains, then when there is very little social uncertainty, trust should not be a factor determining behavioral intentions. This occurs when the regulatory effectiveness of the marketplace is so high that deviations from the accepted transaction norms are rare. The regulatory effectiveness of the authority in place is such that lack of compliance is unfounded. An example of this is the way behavioral intentions to buy at a regular store are seldom, if at all, affected by the trust a buyer has in the specific store not to give out counterfeit money. It is the tangible, hard guarantee provided by government regulation which makes trust immaterial in this decision. Therefore, trust should be unnecessary and inconsequential when there is an extremely effective regulatory authority in place that makes opportunism irrational.

This proposition is also consistent with Mayer et al.’s (1995) view of trust. When regulatory effectiveness of the marketplace is extremely high, then there should be virtually no social uncertainty. As a result, trust should be immaterial in these cases since trust is only necessary in determining behavioral intentions when people perceive some vulnerability when dealing with a specific party. When there is a reasonable guarantee of the behavior of others in the society, such as a when there is effective regulation, people have less need to rely on trust to reduce uncertainty. As Fukuyama (1995) states: “By this account, trust is not necessary for cooperation: enlightened self-

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4 Arguably, the world is more complex than this dichotomous divide between high-trust and low-trust cultures. And so, in applying this logic to electronic marketplace, we elected to treat confidence in marketplace management as a continuous variable.

5 This corresponds to the way Mayer et al. (1995) explain the role of trust. When overall situational uncertainty, which Mayer et al. (1995) in contrast to other research call “perceived risk in the situation”, is very high then it precludes trust from affecting behavioral intentions. As long as the overall situational uncertainty is lower than what people’s trust can overcome, then trust will affect behavioral intentions by letting people overcome the inhibiting effect of the overall situational uncertainty. But when overall situational uncertainty is more than their trust can overcome then trust no longer affects behavioral intentions (Mayer et al., 1995).
interest, together with legal mechanisms like contracts, can compensate for an absence of trust and allow strangers to jointly to create an organization that will work for a common purpose.”

Integrating the preceding arguments results in an inverted-U relationship for the impact of buyers’ trust on transaction intentions with the community of sellers in online marketplaces. As the buyers’ perceived regulatory effectiveness of the online marketplace increases, then, by extending Fukuyama (1995), the impact of buyers’ trust on transaction intentions should increase. But when this perceived regulatory effectiveness increases much further and social uncertainty almost diminishes, extending Luhmann (1979), the importance of buyers’ trust should also diminish in determining transaction intentions with sellers in the online marketplace.

The proposed relationship is graphically depicted in Figure 1.

**Figure 1: The Proposed Inverted-U Relationship between Trust and Transaction Intentions**

Hypotheses Development

**The Moderating Role of the Perceived Regulatory Effectiveness of Online Marketplaces**

When buyers have little confidence in the regulatory effectiveness of the online marketplace to set and enforce appropriate rules of conduct, we propose that their trust in the community of sellers should have a lesser impact on their transaction intentions. Such a situation arguably parallels a low-trust culture where people generally refrain from dealing with strangers (Fukuyama, 1995). Accordingly, the higher degree of social uncertainty created by a non-regulated marketplace also increases the overall uncertainty of the situation, and so renders trust immaterial (Mayer et al., 1995). Consequently, the impact of buyer trust in the community of sellers on transaction intentions should be weaker when buyers have low confidence in the regulatory effectiveness of the online marketplace.

In an analogous manner, resembling a low-trust culture, people will stay away from strangers on a dark street corner if they think the police is not effectively patrolling the streets. Trust in strangers will have little to do with it. But, when people believe the police is effectively patrolling, they would not immediately rule out talking to strangers. In
this case, they would bring into account a whole set of considerations, including trust and perceived risk, in making their decision. So too, in an online marketplace, where almost all the transactions are with new and unknown sellers, buyers who believe the marketplace is regulated ineffectively should tend to generally refrain from transacting with new and unknown sellers, making their trust in the community of sellers a less important factor. On the other hand, buyers who feel there is an adequate level of regulation, i.e. those who approach the community of sellers with a high-trust approach, should be more inclined to transact. Hence, trust in the community of sellers should be influential. Practically speaking, if this logic applies to online marketplaces, then this argument should translate to a significant increase in the coefficient of the path between trust in the community of sellers and transaction intentions in the online marketplace as buyers’ perceived regulatory effectiveness of the online marketplace increases.

However, following Luhmann (1979), trust affects behavioral intentions only when the person feels vulnerable to the actions of the other party (Mayer et al., 1995). In this case, when buyers perceive the regulatory effectiveness of the online marketplace to be so strong that they foresee little social uncertainty, then, trust in the community of sellers should not be a significant consideration in determining their transaction intentions. Trust is generally irrelevant when such guarantees are strong (Mayer et al., 1995). Accordingly, while there should be an increase in the effect of buyers’ trust on their behavioral intentions as the perceived regulatory effectiveness of the online marketplace increases (Fukuyama 1995), this increase should be reversed when this perceived regulatory effectiveness becomes extremely strong (Luhmann 1979). The aforementioned suggest the following hypothesis:

**H1**: The impact of buyers’ trust on transaction intentions with the community of sellers will be higher for moderate levels of the buyers’ perceived regulatory effectiveness of online marketplaces compared to extremely low and high levels.

Related to buyers’ trust and its effect on transaction intentions is the buyers’ perceived risk from the community of sellers in online marketplaces. Perceived risk from the community of sellers negatively affects transaction intentions with sellers in online marketplaces (Pavlou and Gefen, 2004). However, the more effective the marketplace regulation is perceived to be by buyers, the less likely buyers may perceive the probability that sellers will act opportunistically. The regulatory effectiveness of the online marketplace reduces risk. Hence, the impact of perceived risk on transaction intentions should decrease as the buyer’s perceived regulatory effectiveness of the online marketplace increases.

**H2**: As the perceived regulatory effectiveness of online marketplaces increases, buyers’ perceived risk from the community of sellers will have a lesser effect on transaction intentions with sellers.

Perceived risk also determines transaction behavior, but it is mitigated by trust (Jarvenpaa and Tractinsky, 1999; Jarvenpaa et al., 2000). Trust reduces perceived risk by allowing people to ignore the possibility that trusted others will engage in inappropriate behavior (Luhmann, 1979). We propose a moderating effect of the perceived regulatory effectiveness of online marketplaces on the relationship between trust and perceived risk. Logically, trust, as a subjective measure used in lieu of actual proof, should have less of an impact on reducing perceived risk when there is an extremely effective regulatory mechanism in place to prevent opportunistic behavior. Accordingly, buyers will rely less on their subjective and tentative trust when determining the risk from the community of sellers when they can rely on more objective regulations.

**H3**: As the perceived regulatory effectiveness of online marketplaces increases, buyers’ trust will have a lesser impact on perceived risk from the community of sellers.

**Control Variables**

Several effects are controlled for their potential impact on the study’s dependent variables:

**Past Buyer Experience.** Past buyer experience deals with a buyer’s own experience with sellers in the marketplace, and it is controlled for its impact on trust, perceived risk, and transaction intentions (Pavlou and Gefen, 2004). This captures buyers’ general opinion about the sellers in a marketplace based on their past experiences (Tirole, 1996). Past experience is thus controlled for its impact on transaction intentions.

**Sellers’ Past Performance.** Whereas past experience draws on a buyer’s own prior encounters with sellers, buyers also have a general knowledge about the average performance of sellers in a marketplace. Thus, sellers’ past
performance in the marketplace is controlled for its impact on trust, perceived risk, and transaction intentions. Sellers’ past performance is expected to have a direct effect on trust, perceived risk, and transaction intentions (Pavlou and Gefen, 2004).

Research Methodology

The proposed hypotheses were tested in the context of transactions with the community of sellers in two online auction marketplaces – eBay and Amazon auctions. These online marketplaces were chosen because they have a set of monitoring and enforcement of regulations, such as forbidding certain types of items (Cox and Olavsrud, 2001) and enforcing appropriate transaction behavior. An example of these actions taken by eBay, according to eBay CEO and president, Meg Whitman, has been actively tracking and investigating suspected cases of shilling. eBay claims it investigates shilling because it recognizes the importance of creating buyer confidence, but eBay has another reason to track and take action against such cases considering a 2005 class action law suit which is pending against them claiming they benefit from shilling (Kuchinskas, 2005). When eBay recognizes such and other types of ethical and legal violations it limits or suspends the user’s account, removes the item from its Web site, and, when appropriate, takes legal action. Additional regulatory actions include monitoring types of merchandise most prone to disputed legal status, tracking non payments, and sending delinquent buyers reminder messages as a way of resolving conflicts before they escalate.

Measurement Development

The perceived regulatory effectiveness of the online marketplace is a new scale. It captures the degree to which the buyer is confident Amazon or eBay, as the case was with the specific sample, actively manages the marketplace to ensure appropriate conduct by monitoring and enforcing that transactions and postings are conducted properly. To some degree, doing so is a legal obligation of marketplace management who are obliged to regulate questionable seller behavior such as shilling and the legality of items being sold. Accordingly, the scale items capture a buyer’s assessments about the effectiveness of the marketplace management in regulating transactions. Item 1 captures this in general terms, items 3 and 4 deal with regulating more specific seller behaviors, and item 2 deals with action taken by the marketplace management to resolve conflicts with sellers. The scale was pilot tested prior to use (Churchill, 1979).

The other measurement items are based on existing scales (Pavlou and Gefen (2004). All survey items are measured on Likert-type scales anchored at ‘strongly disagree’ (1), ‘strongly agree’ (5), and ‘neither agree nor disagree’ (3) (Appendix 1).

Survey Administration

The target population of the study was composed of buyers at Amazon Auctions and eBay, which together span about 70% of the online auction market share (Wolverton, 2001). With an email extractor spider program, 1,600 emails of buyers at Amazon’s auction site and 800 emails of buyers at eBay’s Web site were randomly chosen. Emails inviting these selected buyers to participate in the study and explaining its purpose were sent. The emails invited the respondents to click on a URL link which brought up the web-based survey instrument, which only differed in terms of the marketplace’s name for Amazon’s and for eBay’s participants. The respondents were offered

6 http://pages.ebay.com/help/policies/items-ov.html
7 Shilling is when buyers bid on an item with no intention of buying it but of inflating its price to benefit the seller.
9 http://pages.ebay.com/help/policies/user-agreement.html
11 http://www.entrepreneur.com/article/0,4621,317317-2,00.html
12 Matlab® selected 10% of the 16,000 email addresses from Amazon and 8,000 from eBay that the spider extracted.
participation in a $250 raffle among the participants and were promised a summary report of the study. The emails assured anonymity and that the results would be reported in only aggregate. Of the 1,600 emails sent to Amazon buyers, 274 responses (17% response rate) were obtained. Of the 800 emails sent to eBay buyers, 192 responses were obtained (24% response rate). In total, the data consisted of 466 responses from both online marketplaces.

Non-response bias was assessed by verifying that (a) the respondents’ demographics are consistent with current Internet consumers ([http://www.4webpower.com/demographics.html](http://www.4webpower.com/demographics.html)), and (b) by verifying that early and late respondents were not significantly different (Armstrong and Overton, 1977). Early respondents were those who responded within the first two weeks. The percentages were roughly equal across the two online marketplaces. The two groups for both marketplaces were compared based on their demographics (age, gender, education, income, and Internet experience). All t-test comparisons between the means of the two groups for both samples showed insignificant differences. Descriptive statistics are shown in Table 1.

### Table 1. Buyers’ Demographic Characteristics

<table>
<thead>
<tr>
<th>Site</th>
<th>Previous Bids Mean (STD)</th>
<th>AGE Mean (STD)</th>
<th>Gender</th>
<th>Annual Income (Mode)</th>
<th>Experience (Years) Mean (STD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon</td>
<td>22(29)</td>
<td>41(15)</td>
<td>55% Men</td>
<td>$25K-$50K</td>
<td>3.2 (1.2)</td>
</tr>
<tr>
<td>eBay</td>
<td>51(81)</td>
<td>43(12)</td>
<td>60% Men</td>
<td>$25K-$50K</td>
<td>3.3 (1.0)</td>
</tr>
</tbody>
</table>

The data from Amazon Auctions and eBay were pooled together after a MANOVA showed that among the measurement items, Wilk’s Lambda was .976 (F=.462; p-value=.979). The F statistics for all individual variables were also insignificant. In addition, based on a t-test statistic and Wilk’s lambda, the results from the two samples were not separable. Considering the operational resemblance between the two marketplaces, this is not surprising. To double check, we performed a separate data analysis on each sample and got virtually identical results. Hence, the results reported here are based on the statistical analysis of the combined data from both online marketplaces.

## Results

### Measurement Validation

All the scales showed good reliability (Table 2). Convergent and discriminant validity tests (Appendix 2) showed that all items loaded well on their respective factors and were much higher than all cross loadings.

### Table 2. Descriptive Statistics and Correlation Matrix with Square Root of the AVE in the Diagonal

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Mean (STD)</th>
<th>Reliability (Cronbach’s Alpha)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived Regulatory Effectiveness of Online Marketplaces</td>
<td>5.1 (1.1)</td>
<td>.94</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Transaction Intentions</td>
<td>4.0 (1.0)</td>
<td>.95</td>
<td>.42**</td>
<td>.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Trust in Sellers</td>
<td>3.9 (1.1)</td>
<td>.97</td>
<td>.63**</td>
<td>.49**</td>
<td>.96</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Perceived Risk from Sellers</td>
<td>2.8 (1.0)</td>
<td>.92</td>
<td>-.32**</td>
<td>-.51**</td>
<td>-.38**</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Buyer’s Past Experience</td>
<td>3.9 (1.1)</td>
<td>.97</td>
<td>.50**</td>
<td>.70**</td>
<td>.57**</td>
<td>-.45*</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>6. Sellers’ Past Performance</td>
<td>3.6 (1.0)</td>
<td>.83</td>
<td>.37**</td>
<td>.60**</td>
<td>.42**</td>
<td>-.42**</td>
<td>.64**</td>
<td>.86</td>
</tr>
</tbody>
</table>

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13 The Chow test is a statistical test for structural change, which determines whether the coefficients in a regression model are the same in separate sub-samples. The Chow test is an application of the F-test, and it requires the sum of squared errors from three regressions, one for each sample period and one for the pooled data. The F value is .27 (p>.99).

14 A canonical discriminant analysis could not classify the data back into their original samples since 99% of the cases were classified into one of the two groups.
Common method bias was first assessed with Harman’s one-factor test (Podsakoff and Organ, 1986). In this test, all principal constructs are entered into a principal components factor analysis. Evidence for common method bias exists when a single factor emerges from the analysis, or one general factor accounts for the majority of the covariance in the interdependent and dependent variables. Since each of the principal constructs explains roughly equal variance, the data do not indicate substantial common method bias. Second, the correlation matrix (Table 2) did not indicate any highly correlated variables, while evidence of common method bias usually results in extremely high correlations ($r>.90$) (Bagozzi et al., 1991).

**Data Analyses**

The data were analyzed in two sequences with multivariate linear regressions. It was analyzed once with all the data, and then in a second round of analyses by splitting the sample into three levels of perceived regulatory effectiveness of the online marketplace. In splitting the sample into these three groups, the clustering was done into three roughly equal groups based on standardizing this scale and then dividing this standardized scale into three equal groups according to the range of the standardized values. There were 157, 179 and 130 data points in each group, respectively. The lower level group ranged in value between -3.03 and -.49 and had an average scale value of -1.15. The middle group ranged between -.37 and .59 with an average of .20. The top group ranged between .77 and 1.32 with an average of 1.11, corresponding respectively to those who felt the regulation was below average, around the average, and above average. In the subsequent multivariate regression analyses, each cluster was tested separately.

Clustering the data was necessary because regression analysis does not enable an examination of the proposed inverted-U interaction effect (Hypothesis 1). To compare the low levels of perceived regulatory effectiveness of online marketplaces with the moderate levels of perceived regulatory effectiveness, there should be a significant increase in the coefficient between buyers’ trust in the community of sellers and their intentions to transact. Moreover, in the transition from the moderate levels of perceived regulatory effectiveness to the higher levels, there should be a significant decrease in this coefficient. If H2 is correct, there should be a significant decrease in the path between buyers’ perceived risk from the community of sellers and their transaction intentions with sellers as the degree of perceived regulatory effectiveness increases. If the reasoning in H3 is correct, then there should be a decrease in the path between trust and perceived risk as the degree of perceived regulatory effectiveness increases.

Descriptive statistics by clusters are shown in Table 3. Trust in the community of sellers, buyers’ experience, and transaction intentions increase as perceived regulatory effectiveness increases, while perceived risk decreases. A set of pair-wise t-tests were run to compare the mean of the middle level with those of the low and high levels. All pairs of means of the middle cluster are significantly different from their corresponding means in the low and top levels.

| Table 3. Descriptive Statistics of the Three Levels of Perceived Regulatory Effectiveness of Online Marketplaces |
|--------------------------------------|----------|----------------------------|----------------|-----------------|-----------------|
| **Confidence in authority efficacy** | Statistic | Transaction Intentions | Trust | Perceived Risk | Buyer’s Experience | Seller Performance |
| Low Level                           | Mean     | 5.1890                | 4.6221 | 3.6093        | 5.0476          | 4.8259          |
|                                     | STD      | 1.56177               | 1.66029 | 1.53122       | 1.69654         | 1.18789         |
| Moderate Level                      | Mean     | 5.8959                | 5.7616 | 3.0084        | 5.9701          | 5.3091          |
|                                     | STD      | .92963                | .82125 | 1.27313       | 1.06205         | .90568          |
| High Level                          | Mean     | 6.5846                | 6.4846 | 2.4615        | 6.6763          | 5.9846          |
|                                     | STD      | .78208                | .72498 | 1.59369       | .62742          | 1.01314         |

The data were then analyzed with a cluster analysis in which the scales were classified based on these three levels of perceived regulatory effectiveness of online marketplaces. The average scale values for each of these clusters are shown in Table 4. As the perceived degree of marketplace regulatory effectiveness increases, the degree of perceived risk significantly decreases, while trust in the community of sellers, past experience, seller performance, and transaction intentions significantly increase.
Table 4. Cluster Centers of the Three Levels of Perceived Regulatory Effectiveness of Online Marketplaces

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 Low</th>
<th>Cluster 2 Moderate</th>
<th>Cluster 3 High</th>
<th>ANOVA F (significance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Risk</td>
<td>4.68</td>
<td>3.59</td>
<td>2.16</td>
<td>127.196 (&lt;.001)</td>
</tr>
<tr>
<td>Trust</td>
<td>3.79</td>
<td>5.09</td>
<td>6.49</td>
<td>205.100 (&lt;.001)</td>
</tr>
<tr>
<td>Seller Performance</td>
<td>3.71</td>
<td>4.98</td>
<td>6.09</td>
<td>235.521 (&lt;.001)</td>
</tr>
<tr>
<td>Buyer’s Experience</td>
<td>3.01</td>
<td>5.74</td>
<td>6.73</td>
<td>526.408 (&lt;.001)</td>
</tr>
<tr>
<td>Transaction Intentions</td>
<td>3.66</td>
<td>5.61</td>
<td>6.65</td>
<td>307.313 (&lt;.001)</td>
</tr>
</tbody>
</table>

The multiple linear regression results for all levels of perceived regulatory effectiveness of online marketplaces are shown in Figure 2. The VIF and Durbin Watson statistics of all the regressions were within the accepted threshold, indicating no serious problems of multicollinearity or autocorrelation. Outlier analysis did not indicate any influential outliers. The numbers on the arrows show the standardized multivariate linear regression coefficients. The numbers in bold below the rectangles show the adjusted $R^2$ values for the study's dependent variables. Single asterisks mean that the path is significant at the .05 level. Double asterisks show statistical significance at the .01 level.

Figure 2. Results across all Levels of Perceived Regulatory Effectiveness of Online Marketplaces

Figure 3 represents the analysis for the three levels of perceived regulatory effectiveness of online marketplaces. The VIF and Durbin Watson statistics of all regression models were within the accepted threshold, indicating no serious problems of multicollinearity or autocorrelation, and outlier analysis did not indicate any influential outliers.

Hypothesis 1 was supported. The coefficient of buyers’ trust on transaction intentions with the community of sellers for the moderate level of perceived regulatory effectiveness, being beta=.15 (SE=.09), is significantly larger (t-value=7.82) than the one for the high perceived regulatory effectiveness, being beta=.07 (SE=.10), and is significantly larger (t-value=10.07) than the one for the low perceived regulatory effectiveness, being beta=.05 (SE=.06). These coefficients are generally low. This is to be expected because there is generally a relatively high

15 Comparing paths in different models is discussed by Keil et al. (2000).
degree of regulatory effectiveness in these markets, so trust, according to our theory, should not be a major determinant.

Hypothesis 2 was supported when comparing the low and medium degrees of perceived regulatory effectiveness, but not so when comparing the two insignificant paths between the medium and high levels. The coefficient of buyer’s perceived risk on transaction intentions with the community of sellers at the moderate levels of perceived regulatory effectiveness (beta=-.09, SE=.05), is significantly larger (t-value=7.21), despite both being insignificant, than the one for high levels of perceived regulatory effectiveness (beta=-.05, SE=.03). Further supporting H2, the path for the medium levels of perceived regulatory effectiveness is significantly lower (t-value=48.96) than the corresponding one for low levels (beta=-.34, SE=.07).

Hypothesis 3 was partly supported. The coefficient of buyers’ trust on perceived risk with the community of sellers at the moderate level of perceived regulatory effectiveness (beta=-.39, SE=.11), is significantly larger (t-value=10.93) than the one of high perceived regulatory effectiveness (beta=-.20, SE=.19), supporting H3, but it is significantly lower (t-value=6.32), rather than larger, than the one with low perceived regulatory effectiveness (beta=-.29, SE=.07).16

Figure 3. Results by Levels of Perceived Regulatory Effectiveness of Online Marketplaces

16 Adding the construct of perceived regulatory effectiveness of the online marketplace to the data analysis as an independent variable made no difference to the pattern of significant paths in the models.
Discussion

The effect of trust on behavioral intentions is unanimously treated in previous research as always increasing behavioral intentions in a straightforward linear manner, while perceived risk is always treated as linearly reducing behavioral intentions. The emerging literature on trust in MIS (Gefen et al., 2003; Jarvenpaa and Tractinsky, 1999; Jarvenpaa et al., 2000; McKnight and Chervany, 2002; McKnight et al., 2002; Pavlou and Gefen, 2004; Stewart, 2003), Marketing (e.g., Doney and Cannon, 1997; Ganesan, 1994; Mishra et al., 1998), sociology (Kollock, 1999; Zucker, 1986) and Organizational Behavior (e.g., Mayer et al., 1995; McKnight et al., 1998; Mishra et al., 1998; Reichheld and Schefer, 2000) has mostly regarded trust as an unconditional antecedent of behavioral intentions. Accordingly, theorists (Blau, 1964; Hosmer, 1995; Kelley and Thibaut, 1978; Larzelere and Huston, 1980; Thibaut and Kelley, 1959; Zucker, 1986) have also seldom make a distinction of under what conditions trust does and does not affect behavioral intentions. Hence, the proposed inverted-U moderation effect of the perceived regulatory effectiveness of online marketplaces on the impact of trust on behavioral intentions (H1), as well as the interaction effect proposed by H2 and H3 stand in contrast to the conclusions of previous research.

The results of this study suggest the need to reconsider the current straightforward linear view of the impact of trust and perceived risk on transaction intentions by integrating the perceived regulatory effectiveness of online marketplaces as a moderator of the impact of trust and perceived risk on transaction intentions.

Although the inverted-U moderating effect of buyer’s perceived regulatory effectiveness of online marketplaces on the way trust affects transaction intentions is new, other types of moderating effects, especially on a national culture level in general, on the way trust affects behavioral intentions have been previously suggested in conceptual papers (Hofstede, 1980). Moderating effects of the way trust itself is affected by various trust building mechanisms and related perceptions have also been suggested by conceptual research (Doney et al., 1998). To date, however, the scant empirical research on this topic has shown only conflicting evidence on these theoretical propositions (Yamagishi and Yamagishi, 1994). This study, in contrast, provides a different theory base and empirically supports the proposition that aspects of culture, in this case perceived marketplace regulation, do moderate the effects of trust, and they do so in a non-linear manner. This conceptualization parallels to some extent the high versus low trust distinction that Fukuyama (1995) theoretically makes when discussing the effects of culture on trust.

Implications for Theory and Practice

The paper has theoretical and practical implications for (a) the role of trust in online environments, (b) building effective online marketplaces, and (c) the design of regulatory mechanisms, which are discussed in detail below:

Implications for the Role of Trust in Online Environments

The proposed inverted-U moderating effect that the perceived regulatory effectiveness of online marketplaces has on the impact of trust on transaction intentions makes us rethink the role of trust in online transaction environments. This is the main contribution of the paper. The results suggest that it may be an oversimplification to assume that trust always increases behavioral intentions in a straightforward linear fashion irrespective of the overarching institutional regulations of the online environment.

Since most of the previous research on trust was conducted in high-trust cultures but not in regulated environments, it is not surprising that trust was unanimously shown to be an important facilitator of business relationships (e.g., Doney and Cannon (1997); Ganesan (1994); Gefen et al. (2003); Kumar (1996); McKnight et al. (2000); Pavlou (2002); Reichheld and Schefer (2000); and Zucker (1986)) and behavioral intentions in general (Blau, 1964; Larzelere and Huston, 1980; Lewis and Weigert, 1985; Luhmann, 1979; McKnight et al., 1998; Rotter, 1967; Shapiro, 1987; Thibaut and Kelley, 1959). The same is true for e-commerce research, which has been conducted almost exclusively either in contexts where regulation was mostly only partial, or in high trust cultures (mainly in the United States), and partly in Australia and Israel (Gefen and Heart, 2006; Jarvenpaa and Tractinsky, 1999; Jarvenpaa et al., 2000). In these studies, trust was always shown to increase behavioral intentions and, where

17 Although some previous research has suggested that trust in organizational setting may sometimes apply as a moderator of other causes, rather than being a direct cause itself, of behavioral intentions (Dirks and Ferrin, 2001).
examined, it also reduced perceived risk (e.g. Pavlou (2003); Pavlou and Gefen (2004)). As this study implies, had these studies been conducted in low trust cultures or in highly regulated scenarios, the results may have been quite different (as our results attest). With the growing internationalization of online marketplaces, the realization of the institutional regulated context is becoming crucial. Accordingly, the study shows the need to reconsider the role of trust and its effects on behavioral intentions and on perceived risk within the broader context of the regulatory effectiveness of online marketplaces.

Trust has been extensively examined in the context of MIS adoption and online buyer-seller transactions. However, in both scenarios, trust was conceptualized as a primary determinant of behavioral intentions, either to adopt an IT or as intentions to engage in online business transactions. It was within this context that Pavlou (2002) and Pavlou and Gefen (2004) proposed extending the concept of trust from trust in a specific seller (in a dyadic context) to trust in the community of sellers with which buyers transact in a marketplace. Trust in the community of sellers was shown to affect perceived risk with the community as well as transaction intentions and behavior. Therefore, extending the conclusions to trust in a specific individual or organization requires replication in other scenarios.

Implications for Building Effective Online Marketplaces

The reduced reliance on trust in sellers as the regulatory effectiveness of the marketplace is perceived to be stronger, on the right hand side in Figure 1, may provide an attractive alternative to the costly investments in fostering trust in online marketplaces and e-commerce in general. Trust is a necessary ingredient in facilitating online transactions, but investing in building this trust can be very costly (Reichheld and Schefter, 2000). Regulatory effectiveness might therefore be an attractive alternative to this investment in trust, especially in low trust cultures where the general atmosphere, one of low trust toward strangers, creates a significant barrier to the creation of trust (Fukuyama, 1995). Rather than investing in building buyers’ trust toward online sellers, then, it might be cheaper and faster to rely also on creating and managing appropriate institutional regulations. Moreover, regulation will have a broader effect on the marketplace as a whole, while trust is mainly on a specific seller and its associates.

This reduced reliance on trust as the regulation increases resonates with Zucker’s (1986) conclusions. In her analysis of the American banking industry in the period spanning 1840 to 1920, Zucker highlighted the trend in the industry to rely more on third party assurances (i.e. escrows and certification) as an alternative to interpersonal trust as the size and dynamics of the banking marketplace increased. The more regulation the industry created through these certification and escrow services, the less the need there was to rely on interpersonal trust. As was the case with the banking industry, increased regulations in online auction marketplaces, and arguably e-commerce in general, can, as a partial alternative to interpersonal trust, be the jumpstart needed in this and other online marketplaces where there is a little initial trust between buyers and sellers, and it is often difficult or expensive to build in a large context.

Moreover, looking at the left hand side of Figure 1 reveals some possible interesting conclusions. As many of the citations above indicate, investing in building trust is crucial in enabling transactions in online auction marketplaces and e-commerce in general. However, this may not always be the case. Among potential buyers who think regulation is ineffective, such an investment may be wasted, as might be the case also when regulation is exceptionally effective. Accordingly, since building online trust is an expensive and time-consuming process, online auctions marketplaces, and by extension online sellers, might find it more cost-effective to focus their trust building efforts on those buyers who perceive moderate levels of regulatory effectiveness in the marketplace. In contrast, among those buyers who perceive extremely low or extremely high regulatory effectiveness, it might be more beneficial to highlight the effectiveness of the regulatory mechanisms than trying to enhance their trust beliefs.

In general, because building buyers’ trust is a social process whereas establishing effective regulations is a legal one, online marketplaces may wish to shift their efforts entirely toward regulation compared to trust building. If effective, this could allow them to rely on buyers’ past experience and sellers’ performance rather than the more fickle trust when considering how to facilitate buyers’ transaction intentions with sellers. As online auction marketplaces, and, by extension, e-commerce in general, matures and it becomes easier to define what and how to regulate them, this option might become an attractive alternative to investing in the creation of the more fickle trust. After all, putting a price tag on the cost of creating effective regulations is possible because these are tangible actions which can be easily defined. In contrast, placing a cost on the actions needed to create the intangible and difficult to measure trust and reduce perceived risk is much harder. As such, investing in regulations is also easier to plan and manage. Finally, investing in building effective regulations also avoids many cross cultural difficulties in building trust, especially given the cross-cultural differences in the antecedents of trust (Doney et al., 1998). Having said this,
however, one should remember that regulations in business are seldom enough and there is almost always a need for cultivating trust (Kumar, 1996). Therefore, solely investing in institutional regulations might not be enough.

**Implications for the Design of Regulatory Mechanisms**

Although the data and the hypotheses dealt explicitly with online auction marketplaces, it may be possible to draw some conclusions about the design of regulatory mechanisms in general. To the extent that the conclusions can be extrapolated into the design of regulatory mechanisms, the data suggest that the design of regulatory mechanisms can influence whether trust will have a prominent role. Accordingly, it can determine not only the perceived risk people feel, but also how important perceived risk is in determining their transaction intentions.

First, if loose regulatory mechanisms are put in place, this could create the impression that monitoring and enforcement are not taken seriously. In this case, people might solely base their behavior on past experience and perceived risk, as opposed to trust. Such regulatory mechanisms may prove even more costly in the long run since trust is a crucial in creating a social network, and without creating a nurturing ground for building trust, the social networking will suffer (Blau, 1964; Fukuyama, 1995).

Second, when extremely strong regulatory mechanisms are put in place, the lack of trust could impede the creation of social networks. The design of regulatory mechanisms would thus create a sense of confidence, but it would not allow room for trust.

Summarizing these arguments, the design of regulatory mechanisms should take into consideration whether trust is needed to have an important role in shaping transaction intentions.

**Conclusion**

Trust and perceived risk are complex constructs, especially when concerning a community of sellers. Accounting for this complexity, and specifically for the regulatory effectiveness of online auction marketplace, can present a more realistic picture of how trust and perceived risk affect transaction intentions. This study’s main contribution is to entice researchers to investigate these complex constructs, and in doing so to take into consideration that both constructs operate within a social context where the institutional environment can make trust and perceived risk more and less influential in shaping transaction intentions depending on the overarching institutional environment.

**References**


### Appendix 1. Measurement Items

<table>
<thead>
<tr>
<th>ITEM</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Regulatory Effectiveness of Online Marketplace</strong></td>
<td></td>
</tr>
<tr>
<td>Reg1</td>
<td>I am confident that eBay/Amazon is an effective third-party enforcing mechanism that assures that all transactions in this auction marketplace are conducted properly.</td>
</tr>
<tr>
<td>Reg2</td>
<td>I believe that eBay/Amazon is an effective third-party authority that helps resolve conflicts.</td>
</tr>
<tr>
<td>Reg3</td>
<td>I believe that eBay/Amazon is an effective authority in this auction marketplace that assures that all products and all product deliveries are in accordance with the posted specifications.</td>
</tr>
<tr>
<td>Reg4</td>
<td>I believe that eBay/Amazon is an effective third-party authority that certifies the appropriate conduct of auction sellers.</td>
</tr>
<tr>
<td><strong>Trust in the Community of Sellers</strong></td>
<td></td>
</tr>
<tr>
<td>Trust1</td>
<td>Sellers in eBay/Amazon’s auctions are in general reliable.</td>
</tr>
<tr>
<td>Trust2</td>
<td>Sellers in eBay/Amazon’s auctions are in general honest.</td>
</tr>
<tr>
<td>Trust3</td>
<td>Sellers in eBay/Amazon’s auctions are in general trustworthy.</td>
</tr>
<tr>
<td><strong>Perceived Risk from Sellers</strong></td>
<td></td>
</tr>
<tr>
<td>Risk1</td>
<td>There is a considerable risk involved in participating in eBay/Amazon auctions.</td>
</tr>
<tr>
<td>Risk2</td>
<td>There is a high potential for loss involved in participating in eBay/Amazon auctions.</td>
</tr>
<tr>
<td>Risk3</td>
<td>My decision to participate in eBay/Amazon auctions is risky.</td>
</tr>
<tr>
<td><strong>Transaction Intentions</strong></td>
<td></td>
</tr>
<tr>
<td>Trans1</td>
<td>Given the chance, I predict that I would consider bidding for products from sellers in eBay’s/Amazon’s auctions in the future.</td>
</tr>
<tr>
<td>Trans2</td>
<td>It is likely that I will actually bid for products from sellers in eBay’s/Amazon’s auctions in the near future.</td>
</tr>
<tr>
<td>Trans3</td>
<td>Given the opportunity, I intend to place a bid in eBay’s/Amazon’s auctions.</td>
</tr>
<tr>
<td><strong>Sellers’ Performance</strong></td>
<td>Please rate the performance of eBay’s/Amazon’s auction sellers on average on fulfilling these goals:</td>
</tr>
<tr>
<td>Perf1</td>
<td>Competitive pricing.</td>
</tr>
<tr>
<td>Perf2</td>
<td>Timeliness of delivery.</td>
</tr>
<tr>
<td>Perf3</td>
<td>High quality products.</td>
</tr>
<tr>
<td><strong>Past Experience</strong></td>
<td></td>
</tr>
<tr>
<td>Exp1</td>
<td>My past experience in eBay’s/Amazon's auction marketplace was positive</td>
</tr>
<tr>
<td>Exp2</td>
<td>I received excellent service from sellers in eBay’s/Amazon's auction marketplace in the past.</td>
</tr>
<tr>
<td>Exp3</td>
<td>Sellers in eBay’s/Amazon's auction marketplace did a good job in the past.</td>
</tr>
</tbody>
</table>
### Appendix 2. Principal Components Factor Analysis with Varimax Rotation

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reg4</td>
<td>.902</td>
<td>-.109</td>
<td>.218</td>
<td>.133</td>
<td>.101</td>
<td>.120</td>
<td>.916</td>
</tr>
<tr>
<td>Reg3</td>
<td>.881</td>
<td>-.126</td>
<td>.187</td>
<td>.079</td>
<td>.129</td>
<td>.161</td>
<td>.876</td>
</tr>
<tr>
<td>Reg2</td>
<td>.855</td>
<td>-.107</td>
<td>.209</td>
<td>.146</td>
<td>.119</td>
<td>.091</td>
<td>.830</td>
</tr>
<tr>
<td>Reg1</td>
<td>.797</td>
<td>-.081</td>
<td>.321</td>
<td>.124</td>
<td>.234</td>
<td>.057</td>
<td>.818</td>
</tr>
<tr>
<td>Risk2</td>
<td>-.139</td>
<td>.908</td>
<td>-.107</td>
<td>-.209</td>
<td>-.089</td>
<td>-.081</td>
<td>.914</td>
</tr>
<tr>
<td>Risk1</td>
<td>-.084</td>
<td>.901</td>
<td>-.123</td>
<td>-.130</td>
<td>-.104</td>
<td>-.104</td>
<td>.872</td>
</tr>
<tr>
<td>Risk3</td>
<td>-.131</td>
<td>.832</td>
<td>-.132</td>
<td>-.176</td>
<td>-.197</td>
<td>-.205</td>
<td>.838</td>
</tr>
<tr>
<td>Trust2</td>
<td>.313</td>
<td>-.152</td>
<td>.863</td>
<td>.166</td>
<td>.166</td>
<td>.167</td>
<td>.948</td>
</tr>
<tr>
<td>Trust3</td>
<td>.334</td>
<td>-.144</td>
<td>.850</td>
<td>.159</td>
<td>.200</td>
<td>.168</td>
<td>.948</td>
</tr>
<tr>
<td>Trust1</td>
<td>.350</td>
<td>-.149</td>
<td>.816</td>
<td>.184</td>
<td>.203</td>
<td>.116</td>
<td>.900</td>
</tr>
<tr>
<td>Trans3</td>
<td>.177</td>
<td>-.232</td>
<td>.172</td>
<td>.830</td>
<td>.203</td>
<td>.255</td>
<td>.911</td>
</tr>
<tr>
<td>Trans2</td>
<td>.182</td>
<td>-.230</td>
<td>.191</td>
<td>.809</td>
<td>.310</td>
<td>.235</td>
<td>.927</td>
</tr>
<tr>
<td>Trans1</td>
<td>.135</td>
<td>-.223</td>
<td>.166</td>
<td>.804</td>
<td>.337</td>
<td>.226</td>
<td>.906</td>
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<tr>
<td>Exp3</td>
<td>.239</td>
<td>-.149</td>
<td>.206</td>
<td>.301</td>
<td>.820</td>
<td>.248</td>
<td>.945</td>
</tr>
<tr>
<td>Exp2</td>
<td>.255</td>
<td>-.184</td>
<td>.195</td>
<td>.310</td>
<td>.788</td>
<td>.302</td>
<td>.946</td>
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<tr>
<td>Exp1</td>
<td>.175</td>
<td>-.205</td>
<td>.271</td>
<td>.317</td>
<td>.776</td>
<td>.280</td>
<td>.927</td>
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<tr>
<td>Perf2</td>
<td>.081</td>
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<td>.141</td>
<td>.160</td>
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<td>.794</td>
<td>.795</td>
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<tr>
<td>Perf3</td>
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<td>.115</td>
<td>.122</td>
<td>.254</td>
<td>.766</td>
<td>.763</td>
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<tr>
<td>Perf1</td>
<td>.127</td>
<td>-.060</td>
<td>.142</td>
<td>.381</td>
<td>.073</td>
<td>.756</td>
<td>.762</td>
</tr>
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</table>

Eigenvalue: 3.621 2.766 2.706 2.701 2.574 2.373