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# Integrating Trust and Risk Perceptions in Business-to-Consumer Electronic Commerce with the Technology Acceptance Model

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## Abstract

*This paper develops and validates a theoretical extension of the Technology Acceptance Model (TAM). The extended model aims to predict and explain consumers' intentions to transact with an Internet-based business-to-consumer electronic commerce (B2C EC) system by integrating trust and risk perceptions with TAM.*

*Trust is the foundation of commerce. Its influence on business relationships is even greater in the online environment, where there are no face-to-face interactions between the transacting parties. Under these conditions, consumers' uncertainty on the transaction outcome would increase, and trust plays an important role in their decision to transact online. In this study, perceived risk is proposed to be a direct antecedent of intention to transact, and the various dimensions of trust are proposed to have a positive influence on perceived risk. Besides testing the model, the relative importance of the trust dimensions is also examined.*

*The model was validated using data collected from 133 subjects. The results provided substantial support for most of the proposed hypotheses and showed the significance of the extended constructs. Several new insights on trust in B2C EC were found and their theoretical implications are discussed.*

## Keywords

Trust, perceived risk, technology acceptance model (TAM), electronic commerce, intention to transact, perceived usefulness, perceived ease of use.

## 1. Introduction

The unprecedented growth in the use of the Internet in the last decade has been seen as an opportunity for operating a profitable business in the virtual environment. From a mere 50 web sites in January 1993, there are more than 1.6 million commercial sites operating on the World Wide Web today (Hoffman and Novak 2000).

Despite the many benefits that business-to-consumer electronic commerce (B2C EC) offers and the high expectations on its growth, many customers still prefer to use the existing offline distribution channels. For example, there are 4.1 million people in Australia registered as online banking customers in September 2001, yet, less than 50% of the registered users are active users (Kavanagh 2002). To increase the use of B2C EC, it is necessary to identify the determinants affecting its growth.

Studies on B2C EC systems adoption can be classified as a class of technology acceptance research, and thus, the Technology Acceptance Model (TAM) by Davis (1986) may be adapted to explain this phenomenon. In recent years, TAM has been used for explaining World Wide Web usage (Moon and Kim 2001), and B2C EC usage (Pavlou 2001). The current study extends TAM for B2C EC adoption by incorporating the multiple dimensions of trust and risk perceptions.

## 2. Theory Development

Figure 1 shows the proposed model. Using TAM as the starting point, the proposed conceptual model incorporates additional theoretical constructs spanning users' perceived risk and the multiple dimensions of trust. In this section, the constructs in the model will be defined and the theoretical rationale for their inclusion will be explained.

### 2.1 Intention to Transact

In TAM, an individual's intention to use a system is proposed to be an antecedent of actual usage (Venkatesh and Davis 2000). The theoretical justification for this is explained in the Theory of Reasoned Action (TRA). It purports that a person's performance of a specified behaviour is determined by his or her behavioural intention to perform the behaviour (Fishbein and Ajzen 1975).

Due to the nature of the online transaction process, which includes using the web site for information inquiry and using the web site for purchasing, the 'intention to use' construct, as proposed in TAM, may not describe the consumers' behaviour adequately. Adopting the definition by Pavlou (2001), 'intention to transact' with the B2C EC system is the dependent variable in our model. This construct puts the original 'intention to use' construct in the B2C EC context, and is defined as the consumers' intent to engage in any exchange of value with the B2C EC service provider.

### 2.2 Perceived Usefulness and Perceived Ease of Use

Transacting with a B2C EC system requires the user to use the system. According to the original TAM, it is expected that the perceived ease of use and usefulness of the system would be positively related to the intention to transact with the system. TAM also proposes that a system would be perceived to be more useful if it is easier to use.

**H1:** Perceived usefulness of a B2C EC system is positively related to the intention to transact with the system.

**H2:** Perceived ease of use of a B2C EC system is positively related to the intention to transact with the system.

**H3:** Perceived ease of use of a B2C EC system is positively related to the perceived usefulness of the system.

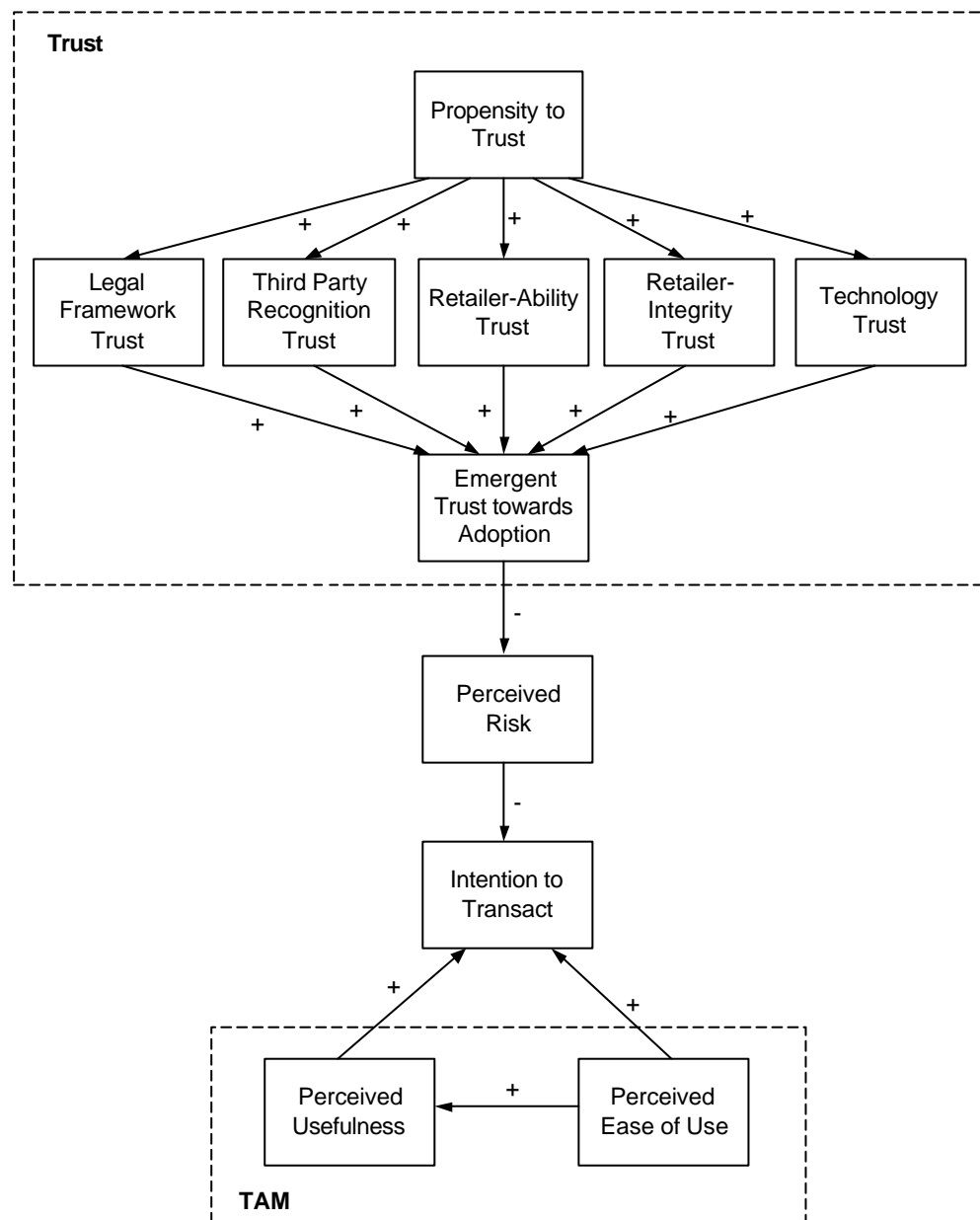


Figure 1. The Proposed Conceptual Model: Trust and Risk integrated with TAM (TRiTAM)

## 2.3 Perceived Risk

Risk is defined as “the state of being open to the chance of injury or loss” (Bernard 1989, p.894). Logically following on from this definition, perceived risk is the subjective probability or expectation that the loss or injury will occur.

In online transactions, we would expect consumers to perceive risks when they are uncertain about the probability of occurrence for each possible outcome for the transaction (Stone and Gronhaug 1993). These possible outcomes, both negative and positive, will affect the consumers’ intention to transact with a B2C EC system. The original TAM tends to focus on the positive aspects of technology use – usefulness and ease of use, and less on the immediate loss that could result from

usage. This weakens the explanatory power of TAM in circumstances where users perceive risk in system usage, typically in B2C EC, where potential loss due to usage is perceived to be a major concern. Thus, we propose the following:

**H4:** The perceived risk in transacting with a B2C EC system is negatively related to the intention to transact with the system.

## 2.4 Trust in Electronic Commerce

Stewart et al. (2001) defines trust in electronic commerce as the subjective probability with which consumers believe that an online transaction with a web retailer will occur in a manner consistent with their expectations. Lack of trust has been proposed to be one of the main reasons for consumers' decision to not engage in electronic commerce (Keen et al, 1999).

Deutsch (1958) claims that trust is only relevant when there is uncertainty involved in the outcome of future events. That is, perceived risk must exist for trust to influence an individual's choice, since in the situation where there is no risk, the choice will be based on economic rationality (Kini and Choobineh 1998). This characteristic is also consistent with our proposed conceptual model.

In a study by Farrell et al. (2002), a key criticism of much of the current literature concerns the oversimplification of the trust concept. Studies that view trust as a singular notion – such as, consumer's trust on web retailers, is not adequate for addressing specific consumer concerns. To provide much richer insights, the different facets of trust must be isolated and acknowledged. However, there are few studies to date, which investigate trust from a multidimensional perspective.

To broaden our understanding, this study examines the relationship between perceived risk and the multiple dimensions of trust. The trust dimensions examined in this study were identified based on a detail review of the trust literature.

## 2.5 Propensity to trust

Propensity to trust can be thought of as an individual's general willingness to trust others. People with different experiences, personality types and cultural backgrounds vary in their propensity to trust (Mayer et al, 1995; Kim et al, 2001).

In this study, we propose that buyers with a higher propensity to trust are more likely to transact because their higher propensity to trust would positively influence the other dimensions of trust, which together results in lower perceived risk, and hence, positively influence their intention to transact.

**H5:** Propensity to trust is positively related to the level of technology, retailer-ability, retailer-integrity, third party recognition and legal framework trusts.

## 2.6 Technology Trust

In this study, technology trust in B2C EC is defined as the subjective probability by which consumers believe that the technology infrastructure supporting the B2C EC system is capable of facilitating transactions according to their expectations.

The importance of technology trust in electronic commerce adoption has been recognised in many studies (Kim et al, 2001; Kini and Choobineh 1998). It is expected that consumers would perceive

lower risks in using a B2C EC system if they trust the technology infrastructure supporting the transaction.

## **2.7 Third Party Recognition and Legal Framework Trust**

Besides technology trust, it is also important to consider consumers' trust on the entities in the external environment that surrounds the B2C EC system. This type of trust also contributes to the overall trust towards using a system.

In this study, we propose this dimension of trust to be composed of trust towards the legal framework associated with the online transaction, and trust towards the third party recognition bodies certifying various elements of the transaction system (Kim et al, 2001). It is expected that a negative relationship exists between these two dimensions of trust and the perceived risks with system usage.

## **2.8 Retailer-Ability Trust**

The current study defines retailer-ability trust in B2C EC as the subjective probability by which consumers' believe that the web retailer has the ability, competence and skills to process transactions as expected. Undoubtedly, the web retailer's ability is one of the characteristics that would affect consumer's trust towards them (Mayer et al, 1995; Keen et al, 1999).

Retailers need to convince consumers of their ability to deliver goods and services as promised. Increasing retailer-ability trust would reduce consumers' perceived risk of transacting online.

## **2.9 Retailer-Integrity Trust**

Retailer-integrity trust refers to the consumer's trust towards the merchant's honesty and willingness to provide the service as expected without acting opportunistically. Opportunistic behaviour includes distortion of information and failure to fulfill promises and obligations (John 1984).

In Mayer et al. (1995), sellers' integrity and benevolence are identified as characteristics that would affect buyer's trust towards the seller. The identification-based trust theory is the foundation of this trust dimension. This theory proposes trust, to be an element constructed through a full internalization of the other party's desires and intentions (Lewicki and Bunker 1995).

Like the other trust dimensions, it is expected that an increase in retailer-integrity trust would reduce customers' perceived risk with using the B2C EC system.

## **2.10 Multiple Dimensions of Trust and Perceived Risks**

As shown in Figure 1, the five dimensions of trust (excluding propensity to trust) are arranged in a second-order molar model, which depicts the multiple trust dimensions as the multidimensional entities of the higher second order factor – emergent trust towards adoption.

There are two different approaches to modelling second order factors, these are known as the molar and molecular approaches (Chin and Gopal 1995). The distinction between the two approaches is very similar to the notion of formative and reflective indicators when modelling indicators and their respective constructs.

In this study, we use the molar approach to model trust and risk perceptions. This is theoretically justified since an increase in a single dimension of trust does not necessarily result in an increase in the other dimensions of trust. Moreover, two individuals can have the same level of trust towards system usage through different levels of the trust dimensions.

As depicted in Figure 1, a direct path between the emergent construct and perceived risk is used to represent the proposed negative relationship between trust and perceived risks.

**H6:** Emergent trust towards the adoption of a B2C EC system is negatively related to the perceived risks in transacting with it.

Chin and Gopal (1995) used the molar model to determine the relative importance of various beliefs to the adoption of a group support system. Determining the relative importance of each trust dimensions in B2C EC adoption is also an objective of this research. A similar approach will be used to meet this objective.

### 3. Research Methods

The deductive research strategy is the main strategy used in this study. Data will be collected on the concepts defined and the proposed hypotheses will be tested.

#### 3.1 Data Collection Procedure

An experiential survey was conducted to validate the proposed research model. A sample of 133 students enrolled in a postgraduate course in information systems participated in the study. The subjects had taken a previous course covering basic concepts in information systems, and are deemed to be computer literate. 58.6% of the subjects were males. 90% of the subjects are in the 16-35 age group and 72% of the subjects have at least one year of industry experience.

There were two criteria for selecting the web site to test the proposed model. First, usage of the chosen web site by the subjects must be voluntary. Second, the web retailer should provide goods and services that the subjects can relate to. This would increase the accuracy of the results. An online web site for a well-established 'bricks and mortar' music retailer meets both site selection criteria and was chosen for this study.

In a free simulation experiment, subjects were given a hypothetical scenario, indicating that they have an intention to purchase an item that is available offline and on the web site they are asked to review. The subjects were asked to complete a web-based self-administered questionnaire after reviewing it.

#### 3.2 Instrument Development

The theoretical constructs in the proposed model were operationalised using validated measures from existing research where possible, or were generated based on similar scales. Seven point measurement scales were used to operationalise each construct in the proposed model.

The TAM constructs, perceived ease of use and perceived usefulness, were measured using items adapted from Davis (1989) and Davis et al. (1989). The measurement scale for perceived risks was adapted from Jarvenpaa et al. (1999) and Stone and Gronhaug (1993). Most of the items for the

trust dimensions are adapted from Pavlou (2001), and Cheung and Lee (2000), with some new items created to enhance content validity.

The research instrument was tested extensively before use. Several experts in information systems were asked to review the questionnaire. Through an iterative process, the questionnaire was updated and reviewed until a consensus was reached. The modified instrument was then tested with a small group of postgraduate students for clarity before use. Several minor changes were made. The final version of the measurement scales is shown in Table 1.

Construct	Items
<b>Intention to Transact</b>	<p>Assuming I have access to the system, I intend to use it.</p> <p>Given that I have access to the system, I predict that I would use it.</p> <p>It is likely that I will transact with this system in the near future.</p>
<b>Perceived Usefulness</b>	<p>Using the system improves my performance in my purchasing.</p> <p>Using the system increases my productivity in purchasing.</p> <p>Using the system enhances my effectiveness in purchasing.</p> <p>I find the system to be useful in my purchasing.</p>
<b>Perceived Ease of Use</b>	<p>Learning to operate the system will be easy for me.</p> <p>I find it easy to get the system to do what I want it to do.</p> <p>It is easy for me to become skilful at using the system.</p> <p>I find the system easy to use.</p>
<b>Perceived Risk</b>	<p>Overall, I am concerned about experiencing some kind of loss if I transact with this system.</p> <p>All things considered, I think I would be making a mistake if I use this system to make a transaction.</p> <p>Transacting with the online system would pose problems for me that I just don't need.</p> <p>How would you characterise the decision of whether to transact with this system? (Scale: 'very insignificant risk' to 'very significant risk')</p> <p>How would you characterise the decision of whether to transact with this system? (Scale: 'very positive situation' to 'very negative situation')</p> <p>How would you characterise the decision of whether to transact with this system? (Scale: 'very high potential for gain' to 'very high potential for loss')</p>
<b>Propensity to Trust</b>	<p>It is easy for me to trust a person/thing.</p> <p>My tendency to trust a person/thing is high.</p> <p>I tend to trust a person/thing, even though I have little knowledge of it.</p>



	Trusting someone or something is not difficult.
<b>Third Party Recognition Trust</b>	<p>I believe third party recognition is doing a good job in protecting users of this system.</p> <p>Existing third party recognition bodies are adequate for the protection of users of this online service.</p> <p>Overall, I have confidence in the third parties that certify the security of this system.</p>
<b>Legal Framework Trust</b>	<p>The existing law is adequate for the protection of interests of those relying on this online service.</p> <p>The existing legal framework is adequate for the protection of interests of those relying on this online service.</p> <p>Overall, I have confidence in the legal framework that governs my interaction with this system.</p>
<b>Technology Trust</b>	<p>I believe the technologies supporting the system are reliable all the time.</p> <p>I believe the technologies supporting the system are secure all the time.</p> <p>Overall, I have confidence in the technology used by the retailer to operate this system.</p>
<b>Retailer-Ability Trust</b>	<p>The retailer has the ability to reliably process transactions made over the Internet.</p> <p>The retailer has sufficient expertise and resources to do business on the Internet.</p> <p>The retailer has adequate knowledge to manage their Internet business.</p>
<b>Retailer-Integrity Trust</b>	<p>I believe the retailer is honest with their consumers.</p> <p>I believe the retailer acts sincerely in dealing with customers.</p> <p>I believe the retailer is concerned about consumer privacy.</p> <p>I believe the retailer keeps promises and commitments.</p> <p>I believe the retailer can be trusted to keep my best interest in mind.</p> <p>I am confident that this retailer will not disclose consumer private information to unauthorised parties.</p>

Table 1. Measurement Scales

## 4. Results

The proposed model was tested using the Partial Least Squares (PLS) approach (with PLS-Graph version 3.0). Using the quantitative data collected from the experiment, a single PLS run would produce data for assessing both the measurement model and the structural model.

## **4.1 Evaluating the Measurement Model**

The means and standard deviations for the items in the measurement model are shown in Table 2. Except for perceived ease of use, the means of all responses are close to neutral. These results are as expected since the subjects have extensive experience in using computers and the Internet. Standard deviations for all responses are in the range 1.22 to 1.78, indicating that there were no problems with floor or ceiling effects.

All constructs to indicators loadings were significant ( $p < 0.01$ ). The t-statistics presented in Table 2 were generated from the Jackknife re-sampling procedure performed on the data set. All the loadings are above 0.60, an acceptable benchmark suggested by Chin (1998).

Construct	Items	Mean	Standard Deviations	Weights	Loadings	Loadings t-statistics
Intention to Transact	ITTa	4.20	1.54	0.3557	0.9182	42.1339
	ITTb	4.24	1.56	0.3974	0.9331	74.9492
	ITTc	3.65	1.72	0.3613	0.8377	27.9325
Perceived Usefulness	PUa	4.55	1.44	0.3130	0.8305	28.6352
	PUb	4.56	1.43	0.2192	0.7295	11.3530
	PUc	4.71	1.36	0.3246	0.8851	28.7366
	PUd	4.74	1.38	0.3532	0.8292	29.1595
Perceived Ease of Use	PEOUa	5.66	1.41	0.2793	0.8890	28.0139
	PEOUb	5.45	1.24	0.3254	0.9220	61.6355
	PEOUc	5.45	1.44	0.2451	0.8720	20.2457
	PEOUd	5.50	1.39	0.2638	0.9019	30.0308
Perceived Risk	PRa	4.23	1.78	0.1806	0.7838	20.7296
	PRb	3.44	1.52	0.2259	0.7909	18.9047
	PRc	3.77	1.66	0.2149	0.7992	20.4772
	PRd	3.84	1.57	0.1885	0.7859	18.597
	PRe	3.70	1.24	0.2172	0.6853	9.6986
	PRf	3.84	1.31	0.2775	0.7603	19.4558
Technology Trust	TTa	3.47	1.50	0.3404	0.8782	31.6365
	TTb	3.20	1.39	0.3478	0.9099	41.8557
	TTc	3.75	1.42	0.4239	0.9072	54.1842
Retailer-Ability Trust	RATa	4.34	1.34	0.3662	0.8904	31.0835
	RATb	4.44	1.29	0.3599	0.9252	50.8567
	RATc	4.47	1.25	0.3633	0.9387	76.8526
Retailer-Integrity Trust	RITa	4.61	1.27	0.1990	0.8562	11.7019
	RITb	4.64	1.27	0.2052	0.8755	33.5464
	RITc	4.64	1.22	0.2271	0.8560	32.9146
	RITd	4.26	1.25	0.1770	0.7050	25.3117
	RITe	4.35	1.37	0.2326	0.7724	18.1552
	RITf	4.01	1.49	0.2193	0.6890	13.4447
Third Party Recognition Trust	TPRTa	4.44	1.18	0.4125	0.8721	30.8869
	TPRTb	4.00	1.28	0.3418	0.7942	14.7526
	TPRTc	4.07	1.34	0.4106	0.8982	36.8295
Legal Framework Trust	LTa	3.44	1.38	0.3347	0.9680	157.5096
	LTb	3.54	1.35	0.3524	0.9666	130.6571
	LTc	3.56	1.39	0.3522	0.9526	100.9647
Propensity to Trust	PTTa	3.61	1.53	0.3110	0.9083	45.0218
	PTTb	3.76	1.54	0.3497	0.9103	33.2020
	PTTc	3.12	1.61	0.2693	0.8304	19.0713
	PTTd	3.66	1.57	0.2290	0.7663	12.4490

Table 2. Descriptive Statistics and Psychometric Properties of Measurement Scales

The composite reliability and average variance extracted (AVE) for each construct are used to assess the reliability of the constructs. These are presented in Table 3. The accepted value for composite reliability is 0.70 or higher (Thompson et al, 1995). Thus, all constructs show a high degree of internal consistency. Average variance extracted (AVE) is another reliability measure used in PLS analysis. It reflects the overall amount of variance in the items accounted for by the latent construct (Cheung and Lee 2000). Average variance extracted is a more conservative measure than

composite reliability, thus, Fornell and Larcker (1981) suggested the acceptable value of AVE to be 0.50 or higher. As shown in Table 3, all constructs meet this criterion.

The AVE can also be used to evaluate discriminant validity (Fornell and Larcker 1981). To fully satisfy the requirements for discriminant validity, the square root of average variance extracted for each construct should be greater than the correlations between the constructs and all the other constructs. These results are presented in Table 4. The data clearly shows the correlations between the constructs to be less than the square root of average variance extracted of their respective constructs.

Construct	Composite reliability	Average variance extracted (AVE)	Cronbach's alpha
Intention to Transact (ITT)	0.925	0.805	0.8736
Perceived Usefulness (PU)	0.891	0.673	0.8378
Perceived Ease of Use (PEOU)	0.942	0.803	0.9170
Perceived Risk (PR)	0.896	0.591	0.8629
Technology Trust (TT)	0.926	0.807	0.8805
Retailer-Ability Trust (RAT)	0.942	0.843	0.9056
Retailer-Integrity Trust (RIT)	0.911	0.633	0.8774
Third Party Recognition Trust (TPRT)	0.891	0.733	0.8161
Legal Framework Trust (LT)	0.974	0.926	0.9600
Propensity to Trust (PTT)	0.916	0.733	0.8768

Table 3. Composite Reliability and AVE for Constructs

	ITT	PU	PEOU	PR	TT	RAT	RIT	TPRT	LT	PTT
ITT	<b>0.897</b>									
PU	0.517	<b>0.820</b>								
PEOU	0.124	0.274	<b>0.896</b>							
PR	- 0.389	- 0.220	- 0.138	<b>0.769</b>						
TT	0.205	0.292	0.046	- 0.343	<b>0.899</b>					
RAT	0.144	0.223	0.190	- 0.338	0.515	<b>0.918</b>				
RIT	0.033	0.337	0.192	- 0.232	0.344	0.564	<b>0.796</b>			
TPRT	0.277	0.258	0.233	- 0.491	0.378	0.437	0.379	<b>0.856</b>		
LT	0.204	0.209	0.083	- 0.343	0.466	0.415	0.341	0.450	<b>0.962</b>	
PTT	0.026	0.064	0.020	-	0.140	0.122	0.224	0.182	0.217	<b>0.856</b>

				0.198						
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Table 4. Correlations Between Constructs (Diagonal Elements are Square Root of AVE)

Based on the above results, convergent validity, discriminant validity and reliability of the constructs and their indicators have been demonstrated. To further confirm the validity and reliability of the constructs, the data were also submitted to an exploratory factor analysis using SPSS for Windows Release 11.0.0.

Principal component analysis, varimax rotation was applied to the entire data set. A ten-component solution was identified. All items loaded on their hypothesized factors and the overall factor solution has an excellent loading pattern explaining 77% of the variation.

Although Chin and Gopal (1995) suggested composite reliability to be a better estimate for internal consistency than Cronbach's alpha, Cronbach's alphas were also calculated to further confirm the internal consistency of the constructs, these are also shown in Table 3. All Cronbach's alpha values are above 0.70, thus, demonstrating internal consistency (Nunnally 1967).

## 4.2 Evaluating the Structural Model

The path coefficients for the model, generated using PLS, are presented in Figure 2. The stability of the estimates was tested with the Jackknife resampling technique, which calculated the significance levels of the coefficients (Chin and Newsted 1999).

Overall, the tests showed significant support for our model and the amount of variance in the dependent latent variables explained by the model was moderately high. The model explained 21% of the variance in perceived risk and 35% of the variance in intention to transact.

For hypothesis 1, there was a significant, positive relationship between the perceived usefulness of the system and the subjects' intention to transact with it (path = 0.465;  $p < 0.001$ ). Hypothesis 2 was not supported by the data. Support was found for hypothesis 3, which postulated that the perceived ease of use of the system would positively influence the perceived usefulness of the system (path = 0.274;  $p < 0.01$ ).

The proposed relationship between perceived risk and intention to transact was negative and statistically significant (path = -0.293;  $p < 0.001$ ), providing support for hypothesis 4. Similarly, for hypothesis 6, support was found for the proposed negative relationship between the emergent trust construct (aggregate of the different dimensions of trust) and perceived risk (path = -0.457;  $p < 0.001$ ).

Although a positive relationship was found between propensity to trust and each of the dimensions of trust, only two of the five paths were statistically significant (refer Figure 2). Therefore, the results do not support hypothesis 5.

All the standardized path coefficients that are statistically significant exceed 0.2, which is the suggested minimum standard by Chin (1998) for paths to be considered meaningful. Thus, the overall fit of the model is good. Competing models were also tested to further validate the proposed relationship between trust, intention to transact, and the mediator perceived risk. Positive tests were found, but are excluded from the discussion in this paper.

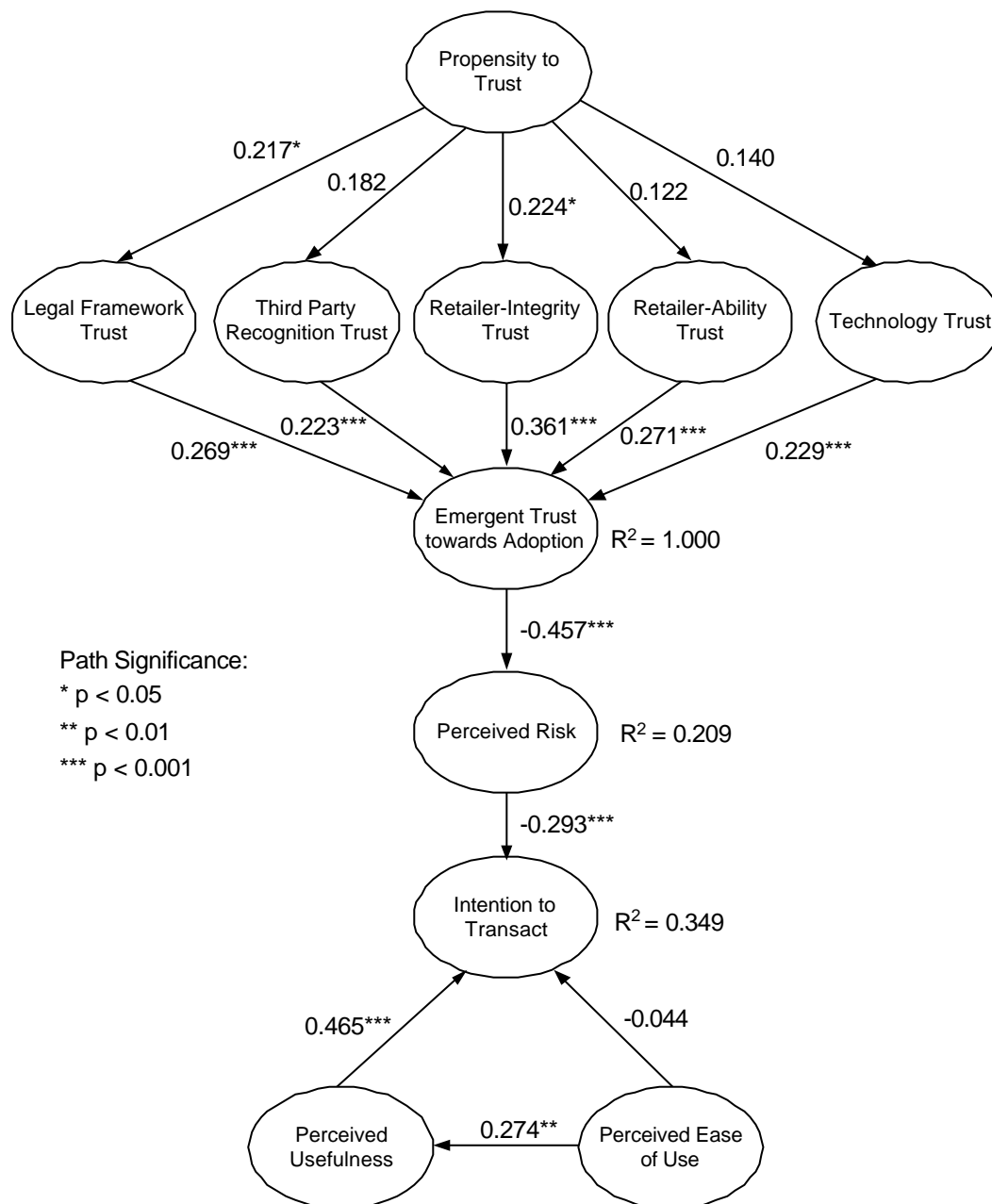


Figure 2. Results of PLS Analysis – Structural Model

### 4.3 Relative Importance of the Trust Dimensions

To determine the relative importance of the trust dimensions, the absolute values of the standardized betas on the paths connecting the second-order factor and the first-order trust factors are compared to one another (Chin and Gopal 1995). Results of the compositional analysis for the different trust dimensions are shown in Table 5. Trust on the retailer's integrity appears to be the most important trust dimension, accounting for 27% of the effect size.

Trust Dimension	Relative Importance*
Retailer-Integrity Trust	27

Retailer-Ability Trust	20
Legal Framework Trust	20
Technology Trust	17
Third Party Recognition Trust	16
*Ordered from most to least important. Adds up to 100 within rounding errors.	

Table 5. Relative Importance of the Trust Dimensions

## 5. Conclusions

A key criticism of much of the current literature concerns the oversimplification of the trust concept, which is often viewed as a singular notion (Farrell et al, 2002). In response to this criticism, exploring the multidimensional nature of trust in B2C EC adoption is the main objective and primary contribution of this research. This research represents an initial attempt to define the concepts, and describe the relationships between the multiple dimensions of consumer trusts, their risk perceptions and intention to transact with B2C EC systems.

An increase in consumer trust was found to be associated with a reduction in perceived risk in B2C EC transactions. In addition, the results supported the proposed negative relationship between perceived risk and intention to transact. Following TAM, the results also supported the proposed positive relationship between perceived usefulness and intention to transact. However, there was no evidence showing a direct effect between perceived ease of use and intention to transact. Findings in Gefen and Straub (2000) can justify this observation. In this particular case, perceived ease of use has no effect on intentions to transact because system ease of use is not an inherent quality of the purchased product.

Amongst the multiple dimensions of trust, trust on the retailer's integrity appears to be the most important in the formation of an individuals' overall trust towards the use of a B2C EC system. The other four dimensions are also found to be important determinants of perceived risk. Surprisingly, the proposed positive relationship between propensity to trust and the five trust dimensions identified in this study was not fully supported. Future research should investigate the role of individuals' propensity to trust in B2C EC adoption in greater detail.

The present research has several limitations that should be noted. The first is the generalisability of the findings outside the current research context. For example, results may vary if the data were collected from a different sample. Second, the focus of the study is on the interaction between trust, risk and intention to transact, thus, the constructs in TAM were merely adapted for B2C EC adoption without significant modifications. Future research should explore other factors that could better predict consumers' intention to use B2C EC. The appropriateness and ability of the measurement scales for measuring the corresponding latent variables should always be considered. It is believed that the extensive validation procedures would ensure the validity of the research instrument.

In conclusion, user acceptance of B2C EC systems remains a complex and dynamic phenomenon in information systems research. While the importance of consumer trust in B2C EC adoption has

been widely accepted, there have been few studies to date, which have investigated this phenomenon. This research has provided a number of contributions to this domain of knowledge, in particular, the development of TRiTAM. It is recommended that future studies should test the robustness of the proposed model in different contexts, and to extend our understanding, incorporate other factors affecting B2C EC adoption to the model.

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