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## Multi-dimensional role of trust in Internet banking adoption

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Trust has been identified as the key to e-commerce because it is crucial wherever uncertainty and interdependence exist. The strong association between a high level of trust and the banking sector has not yet been fully translated in the electronic world. The aim of this article is to develop and validate a multi-dimensional model of trust for Internet banking. The data are collected through 441 Internet banking users of Halifax Bank of Scotland. Findings suggest that trust and perceived risk are direct antecedents of intention, and trust is a multi-dimensional construct with three antecedents: perceived trustworthiness, perceived security, and perceived privacy.

**Keywords:** online trust; perceived privacy; perceived security; perceived risk; perceived trustworthiness; behavioural intentions; Internet banking

### Introduction

The banking industry is strongly associated with high levels of trust related to security and privacy issues in the physical environment. However, this association has not yet been translated in the electronic world to its full potential (Yousafzai, Pallister, & Foxall, 2005). The absence of physical branch and physical interaction renders a unique environment, in which trust is of vital importance. Majority of the customers are reluctant to adopt Internet banking because of security and privacy concerns (Lee & Turban, 2001). Thus, the lack of customer trust, both in the attributes of the bank and in the overall online environment has been, and remains, an obstacle in the widespread adoption of Internet banking. Aladwani (2001) therefore, has identified customers' trust as an important future challenge for Internet banking. Customers' trust in Internet banking transactions has some unique dimensions, that is, the impersonal nature of the online environment, the extensive use of technology, and the inherent uncertainty of using an open infrastructure for transactions. There are also concerns about the reliability of the underlying Internet and related infrastructure with the extensive media coverage about frauds on the Internet. This provides a unique challenge for banks to find ways to initiate and foster electronic relationships with customers.

The survival of Internet banking depends on the bank's ability to convince the customers to bank online, an act that is unlikely to occur if the bank is being perceived as untrustworthy. Banks can build mutually valuable relationships with their online customers through a trust-based collaboration process (Dayal, Landesberg, & Zeisser, 1999). However, the way in which trust may be gained and the impact it has on Internet banking is not yet well understood. Trust in Internet banking is a new and emerging area of interest in the field of marketing of financial services research. Extant literature

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on trust related to Internet banking is scarce and focused on more general issues of e-commerce. However, the literature of e-commerce has at large picked up trust as a major obstacle in its growth and adoption. The widely cited study of Cheskin Research, Studio Archetype/Sapient (1999) suggested to e-businesses that the customer's 'untrust' perceptions must be overcome if they want to build, confirm, and maintain trust.

Towards this end, the aim of this article is to develop and validate a model of trust for Internet banking. The next section will discuss the theoretical foundations of trust, followed by a brief literature review of trust in e-commerce. The section on 'a model of trust for Internet banking' develops a model of trust. The methodology for questionnaire design and data collection is explained in the section 'research methodology'. Finally, the article presents the results, discusses the findings, and concludes by providing implications for practice and research and suggesting directions for future research.

### Theoretical foundations of trust

Trust has long been considered as a catalyst in many buyer–seller transactions that can provide consumers with high expectations of satisfying exchange relationships (Hawes, Kenneth, & Swan, 1989). Researchers have examined trust in various contexts: as related to bargaining (Schurr & Ozanne, 1985), industrial buyer–seller relationships (Doney & Cannon, 1997), distribution channels (Dwyer, Schurr, & Oh, 1987), and the use of market research (Moorman, Deshpande, & Zaltman, 1993). These research streams can be classified into three categories of *personality theorists*, *sociologists and economists*, and *social psychologists*.

Personality theorists view trust as an individual characteristic (Rotter, 1967). They conceptualize trust as a belief, expectancy, or feeling deeply rooted in the personality and originating in the individual's early psychological development, also known as 'disposition to trust' (Mayer, Davis, & Schoorman, 1995). Economists and sociologists have been interested in how institutions and incentives are created to reduce the anxiety and uncertainty associated with the exchange process (e.g. Williamson, 1993). Social psychologists have characterized trust in terms of the expectations and willingness of the trusting party in a transaction, the risk associated with acting on such expectations, and the contextual factors that either enhance or inhibit the development and maintenance of trust (e.g. Lewicki & Bunker, 1995). The social-psychology perspective appears to be most relevant to understand trust in e-commerce because of its focuses on transactions and contextual factors which can be influenced by the person's interaction with the situation (Lee & Turban, 2001).

In their meta-analysis of trust in organizations, Rousseau, Sitkin, Burt, and Camerer (1998) outlined two important elements of trust: (1) the perception of risk and (2) the expectation that the trustee will behave in the interest of the trusting party. Other researchers have conceptualized trust by highlighting the risk involved (Johnson-George & Swap, 1982) and the vulnerability of a party (Boss, 1978). Following the extant definitions of trust (e.g. Mayer et al., 1995; Rousseau et al., 1998) applied to an Internet banking context, the present study defines trust on Internet banking as 'willingness to perform banking transactions on the Internet, expecting that the bank will fulfil its obligations, irrespective of the customer's ability to monitor or control the bank's actions on the Internet'.

This definition captures two discrete but inseparable aspects of trust in the context of Internet banking. First, it involves the traditional view of trust in a specific party, i.e. the bank providing Internet banking services, and secondly, it implicitly encompasses trust in the integrity of the transaction medium, i.e. the Internet. This definition also confirms the

two dimensions of trust, proposed by McKnight, Cummings, and Chervany (1998) as the 'institution-based trust' and 'trusting beliefs'.

### Research on trust in e-commerce

Lee and Turban (2001) suggest that consumers' trust in e-commerce is driven by the trustworthiness of the web vendor and that of the web-shopping medium, contextual factors, and the individual's trust propensity. Security and privacy are also picked up as the key drivers of online trust. Hoffman, Novak, and Peralta (1999) argue that consumers' ability to control the actions of a web vendor directly affects their perception of security and privacy. Many other scholars have reinforced that only after security and privacy have been addressed, consumers will consider other web features to determine the extent to which they can trust and feel safe in transacting with the web vendor (e.g. Benassi, 1999; Dayal et al., 1999).

Some authors have studied trust in the light of experience. For example, Jarvenpaa, Tractinsky, and Vitale (2000) suggest that in early stages, online trust might have more to do with the performance of technology, whereas in the later stages, trust may depend more on the differences in the implementation of Internet technology by firms. Along the same line, Marcella (1999) discusses the deepening of online trust from building trust to confirming and maintaining trust over time. The quantity, quality, and timeliness of information can also enhance trust (Urban, Sultan, & Willian, 2000).

### A model of trust for Internet banking

The literature on trust provides a useful basis for investigating consumer trust and its antecedents in the context of e-commerce, but as pointed out by Mayer et al. (1995) many researchers confuse trust with its antecedents. Elements and determinants of trust have been used interchangeably in many studies. Another important limitation is whether trustworthiness is part of trust or a different construct. Gefen, Rao, and Tractinsky (2003) note the tendency of online trust research to treat conceptualization of trust as a unidimensional construct, ignoring the large body of literature suggesting that it is a complex multi-dimensional construct. Drawing from previous literature, this section aims to remove this confusion by proposing a simple yet parsimonious model of trust for Internet banking. Figure 1 suggests that intentions to patronize Internet banking is contingent on the

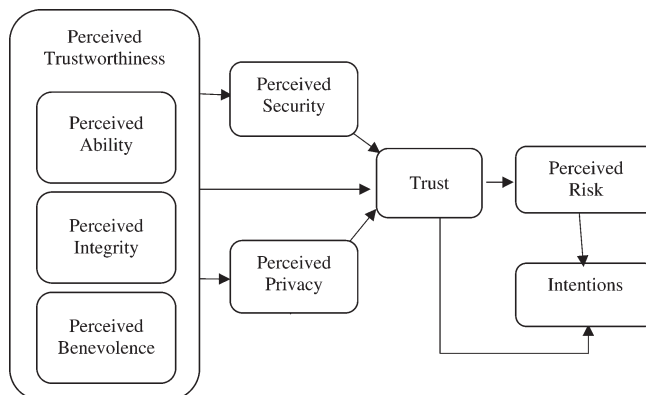


Figure 1. A model of trust for Internet banking (adopted from Yousafzai, Pallister, & Foxall, 2003).

banks' ability to evoke customer trust. Trust is associated with lower perceived risk and is made up of customers' perceptions of security and privacy. The present study proposes that for perception of high security and privacy to exist, customers must believe that the bank has both the ability and motivation, i.e. perceived trustworthiness, to reliably deliver online banking services. Customers' perception of a bank as a trustworthy Internet banking provider also has a direct effect on their trust. The direct influence of perceived risk on intentions is related to the notion of perceived behavioural control in the theory of planned behaviour (Ajzen, 1991).

*Perceived risk: a consequence of trust*

Perceived risk has formally been defined as 'a combination of uncertainty plus the seriousness of outcome involved' (Bauer, 1967). The distant and impersonal nature of the online environment and the implicit uncertainty of using a global infrastructure for transactions can bring about several risks that are either caused by functional defects or security problems or by the conduct of parties that are involved in the online transaction (Pavlou, 2003). Literature on trust dating from Deutsch (1960), generally suggest that trust is interwoven with risk, because it reduces the risk of falling victim to opportunistic behaviour (Ganesan, 1994). Researchers agree that that trust lowers the perceived risk of facing a negative outcome of a transaction by reducing the information complexity (e.g. Mayer et al., 1995). Research on trust, however, does not clarify the relationship between trust and perceived risk. According to Mayer et al. (1995, p. 711) 'it is unclear whether risk is an antecedent to trust, is trust, or an outcome of trust'. This implies causality between trust and perceived risk, without being clear about the direction of the causality. Rousseau et al. (1998) proposes a reciprocal relationship without implying causality, 'risk creates an opportunity for trust, which leads to risk taking'. This confusion is further compounded when the effect of the trust–risk relationship on customer's intentions and actual behaviour is considered.

Gefen et al. (2003) proposed two models from the trust and risk literature: (1) perceived risk mediates between trust and behaviour and (2) perceived risk moderates between trust and behaviour. The conceptualization of perceived risk in this article is based on the first model, which suggests that the higher the level of the customers' trust the lower will be their perception of risk, thus leading to development of positive

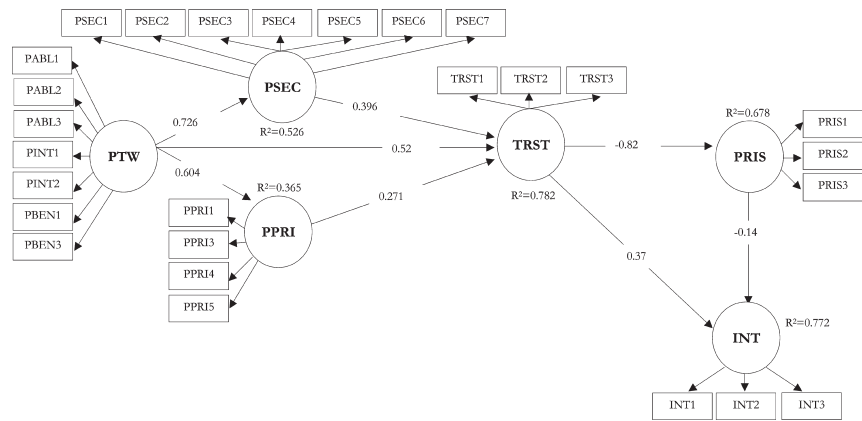


Figure 2. The structural model results,  $R^2$ , and significant coefficients.

intentions. Recent studies of an Internet store suggests that customers' trust on the Internet store leads to a low perceived risk of buying from that store (e.g. Jarvenpaa et al., 2000). The mediating role of perceived risk in the relationship between trust and intention has been asserted by many other researchers over time (e.g. Cheung & Lee, 2000; Pavlou, 2003). Following the literature, it is proposed that:

*H1: Perceived risk negatively influences intention.*

*H2: Trust positively influences intention.*

*H3: High trust reduces perceived risk.*

### ***Antecedents of trust***

Previous research has conceptualized trust in one of the following two ways:

- (1) As a set of specific beliefs about the specific other party (Doney & Cannon, 1997; Gefen, 2002). Trust was conceptualized as a single-dimensional scale combining many aspects into one factor
- (2) As a general belief that the specific other party can be trusted (e.g. Gefen, 2000), with the specific beliefs in ability, integrity, and benevolence (labelled, in this case as trustworthiness) serving as antecedents of this general belief in trust (e.g. Mayer et al., 1995).

The present study adopts the second option, naming the specific beliefs (ability, integrity, and benevolence) as dimensions of trustworthiness and naming the general belief as overall trust. This study also treats the perceptions of privacy and security as antecedents of trust because previous research has asserted that the 'first and most necessary step' in establishing customers' trust is to provide them with the guarantee that their personal information will be safeguarded (Cheskin Research, Studio Archetype/Sapient, 1999). Belanger, Hiller, and Smith (2002) has pointed to the deficiency of existent e-commerce literature in conceptualizing security and privacy as distinct issues. In the present study, privacy and security are treated as two separate constructs and they are defined similar to the distinction that Hoffman et al. (1999) used in identifying 'environmental control' as separate from 'control over the use of information'.

### ***Perceived security***

Security has been widely recognized as one of the most significant barriers to the adoption of Internet banking (1). Daniel (1999) identified security as a factor influencing customer acceptance in the UK. Security in e-commerce is being defined as a threat which creates the 'circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, fraud, and abuse' (Kalakota & Whinston, 1997). In the present study perceived security is defined as the customers' perception of the degree of protection against the above-mentioned threats.

Literature suggests that security can be guaranteed with adequate encryption, digital signatures, and firewalls (Bhimani, 1996), albeit consumers' perception of online security is a different phenomenon. Even if it is feasible to objectively measure the degree of security in every transaction, it is unclear whether this measurement would readily correspond to the consumers' perceptions of security. In the risky environment of e-commerce transactions the objective, scientific perspective is usually different from the subjective, intuitively grounded one (Schenk, Vitalari, & Davis, 1998). The present study measures the customers'

subjective perspective about secure Internet banking transactions based on their perceptions of timely, accurate, and safe data transmission. Following Ratnasingham (1998), it is proposed that when a customer develops positive perceptions of security, the trust and confidence in the relationship will also increase and will promote open, substantive, and influential information exchange.

*H4: Perceived security positively influences trust.*

### ***Perceived privacy***

Perceived privacy, as defined by Goodwin (1991) is the consumer's ability to control (a) the presence of other people in the environment during a transaction and (b) the dissemination of provided information. The present study defines perceived privacy as customers' perception regarding their ability to monitor and control the collection, use, disclosure, and subsequent access of their information provided to the bank during an online transaction.

Consumers in online environments perceive little control over information privacy and this has a striking influence on their willingness to engage in trusting relationships with web merchants. Financial service customers are more reluctant to use online services out of fear that their financial life will become an open book to the Internet universe (Bestavros, 2000). Thus there is a risk of a loss of privacy, which is a significant factor in building trust. The literature has described the willingness to assume the risk of disclosure as a dimension of trust (Nowak & Phelps, 1997). This suggests that the customers having a high perception of online privacy will be more willing to trust and patronize Internet banking services.

*H5: Perceived privacy positively influences trust.*

### ***Perceived trustworthiness***

An issue hampering a richer examination of customers' trust on e-commerce is the lack of empirical attention given to perceived trustworthiness. The distinction between trust and trustworthiness was articulated by Mayer et al. (1995). They indicated that perceived trustworthiness is the trustor's perception of how trustworthy the trustee is, while trust is the trustor's willingness to engage in a risky behaviour. Mayer et al. (1995) identified three main elements of perceived trustworthiness as ability, integrity, and benevolence. However, the authors noted that these factors are 'not trust per se', but they 'help build the foundation for the development of trust' (p. 717). They also suggested that these characteristics are related, but separable, and that together they explain a large variance in trustworthiness while maintaining parsimony.

Previous research has shown that perceived trustworthiness directly or indirectly influences the customer's level of trust in e-commerce transactions (Jarvenpaa & Tractinsky, 1999). However, the literature on online trust has rarely addressed trustworthiness as a distinct concept and mostly it is subsumed by a trust construct. In this study, it is proposed that perceived trustworthiness will have an indirect effect, through perceived security and perceived privacy, and a direct effect on the customers' trust to engage in Internet banking because it will assure the customers that the bank is both competent (able) and willing (benevolence and integrity) to deliver services in accordance with their expectations.

*H6: Perceived trustworthiness positively influence trust.*

*H7: Perceived trustworthiness positively influence perceived security.*

*H8: Perceived trustworthiness positively influence perceived privacy.*



## Research methodology

### *Measure development and validation*

An initial pool of items was created from a review of the existing literature on technology acceptance. Some items were taken from the previous literature with modifications to fit the context of Internet banking. The remaining items were developed through proposed definitions of the constructs, focus groups, and personal interviews with Internet banking users and the e-commerce manager and research adviser at Halifax Bank.

Operationalization of the perceived risk scale is based on three items representing the likelihood of occurrence of a risky situation (Sitkin & Weingart, 1995) and magnitude of risk involved (Jarvenpaa et al., 2000). Measures for trust are operationalized as ‘overall trust’ on service (Internet banking), entity (bank), and medium of transaction (Internet).

Operationalization of perceived security is based on Ratnasingham’s (1998) definition of e-commerce security, as protection from the threats and risks of transactional integrity, authentication, and authorization. Operationalization of perceived privacy is based on the dimensions of awareness of information collection, information usage, access, and enforcement (Chellappa, 2003).

The operationalization of perceived benevolence is based on items that refer to whether or not the bank demonstrates empathy and reception towards customers’ concerns and its interest in the customers well being (Gefen, 2002; McKnight et al., 1998). The perceived integrity scale is based on items that refer to customers’ perception of the bank’s adherence to fair rules of conducting transactions, consistency in the bank’s actions and policies, and the perception that the bank will continue its commitment to provide reliable services (McKnight et al., 1998). The scale for perceived ability is based on items referring to whether or not customers perceive the bank as possessing necessary domain-specific skills and its continuous availability of the service (Bhattacharjee, 2002; Gefen, 2002).

All multiple-item scales were measured on a 7-point Likert-type scale with anchors of *strongly agree* (1) to *strongly disagree* (7). The final scale is attached in the appendix.

### *Data collection and non-response bias*

The data were collected through questionnaires sent to 2000 Internet banking users of Halifax Bank. Four hundred and forty-one completed questionnaires were received, giving a response rate of 22.05%. The Mann–Whitney U and Wilcoxon W tests were conducted to check the non-response bias and the results yielded no significant differences ( $p = 0.05$ ) between the last and the first quartile respondents.

The demographic profile of the survey respondents shows that 43.7% of the respondents were female and 56.3% male. The largest age group consisted of those aged 26–45 years (41.6%), followed by the age group 46–60 years (36.6%). The average Internet experience of the respondents was 2.59 years and the average Internet banking experience was 1.46 years.

### *Data analysis*

The data analysis was carried out in accordance with a two-step methodology (Anderson & Gerbing, 1988) where ‘the measurement model is first developed and evaluated separately from the full structural equation model’ (p. 191). Accordingly, the first step was to establish the unidimensionality, reliability, convergent, and discriminant validity of the constructs with confirmatory factor analysis (CFA) using the AMOS software (version 5). Table 1 summarizes the CFA results.



Table 1 suggests that all standardized regression weights are greater than 0.60 and the critical ratios are significant at  $p = 0.001$ . The adjusted  $\chi^2$  ( $\chi^2/df$ ) is 3.76 and other goodness-of-fit statistics indicate that the model achieved a good fit to the observed data, thus satisfying the conditions of unidimensionality. Turning to the assessment of measure of reliability, Table 1 indicates that the reliability in individual items based on the  $R^2$  values for all indicators is greater than 0.50, except PPRIV1 (0.47). In terms of composite values, the constructs exceed the value of 0.60 recommended by Bagozzi and Yi (1989). In addition, reliability evaluation based on the average variance extracted (AVE), suggested by Fornell and Larcker (1981), revealed that all constructs exceed 0.50. This implies that the variance captured by the construct is greater than the variance accounted for by measurement error. Furthermore, the Cronbach's alpha values for all the constructs exceeds 0.70. Concerning discriminant validity, Table 2 suggests that the correlation coefficients among the latent constructs do not exceed the cut-off point of 0.85 (Kline, 2005). Additionally, a comparison between the square root of AVE and correlations in Table 2 also establishes the discriminant validity.

Table 1. CFA results for measurement model.

Construct		Regression weight	Critical ratio (t-value)	$R^2$	$\alpha$	CR, AVE
Intention	INT1	0.75	—	0.64	0.84	0.91, 0.76
	INT2	0.85	18.32***	0.73		
	INT3	0.80	17.05***	0.60		
Perceived risk	PRISK1	0.82	11.50***	0.67	0.80	0.91, 0.78
	PRISK2	0.97	12.45***	0.94		
	PRISK3	0.64	—	0.51		
Trust	TSRT1	0.94	—	0.81	0.92	0.96, 0.88
	TRST2	0.84	20.92***	0.71		
	TRST3	0.90	30.83***	0.95		
Perceived security	PSEC1	0.61	13.81***	0.52	0.92	0.94, 0.73
	PSEC2	0.62	15.46***	0.58		
	PSEC3	0.73	20.20***	0.53		
	PSEC4	0.69	18.24***	0.84		
	PSEC5	0.91	34.47***	0.83		
	PSEC6	0.88	30.69***	0.77		
	PSEC7	0.95	—	0.90		
Perceived privacy	PPRIV1	0.61	12.50***	0.47	0.81	0.91, 0.76
	PPRIV3	0.80	20.50***	0.63		
	PPRIV4	0.90	24.74***	0.82		
	PPRIV5	0.88	—	0.77		
Perceived trustworthiness	PABL1	0.85	8.40***	0.73	0.84	0.89, 0.64
	PABL2	0.80	8.26***	0.63		
	PABL3	0.68	7.87***	0.51		
	PINT1	0.80	8.23***	0.65		
	PINT2	0.61	7.72***	0.52		
	PBEN1	0.62	7.07***	0.56		
	PBEN3	0.61	—	0.56		

Overall goodness-of-fit indices  
 $\chi^2/df = 3.76$   
GFI = 0.91; CFI = 0.96; TLI = 0.94  
RMSEA = 0.07

Note:  $\alpha$ , Cronbach's alpha; CR, composite reliability; AVE, average variance extracted; GFI, goodness-of-fit index; CFI, comparable fit index; TLI, tucker lewis index; RMSEA, root mean square error of approximation. \*\*\* $p = 0.001$ .

Table 2. Descriptive statistics, correlation matrix and square root of AVE.

Constructs	1	2	3	4	5	6
1. Behavioural intentions	<i>0.87</i>					
2. Perceived risk	−0.36	<i>0.88</i>				
3. Trust	0.61	−0.61	<i>0.94</i>			
4. Perceived security	0.27	0.54	0.76	<i>0.85</i>		
5. Perceived privacy	0.22	0.47	0.59	0.60	<i>0.87</i>	
6. Perceived trustworthiness	0.26	0.47	0.77	0.69	0.58	<i>0.80</i>
Mean	3.35	3.32	3.20	3.77	3.65	3.54
Standard deviation	1.32	1.36	1.60	1.59	1.67	1.52

Note: Diagonal values represented in italics are square root of average variance extracted (AVE); off-diagonal values are correlations between constructs.

### Structural model results

Table 3 presents the parameter estimates of the full structural model. The fit indices ( $\chi^2/df = 3.8$ ; goodness-of-fit index = 0.91; comparable fit index = 0.94; tucker lewis index (TLI) = 0.93; root mean square error of approximation = 0.07) imply that the model has achieved a good fit. A total of 77.2% of the variance in intentions is explained by two significant predictors ( $R^2 = 0.77$ ); perceived risk ( $H1$ : −0.14) and trust ( $H2$ : 0.37). The perceived risk involved in Internet banking transactions is significantly predicted by respondents' level of trust ( $H3$ : −0.823;  $R^2 = 0.67$ ). A total of 78.2% of variance in trust on Internet banking transactions is predicted by perceived security ( $H4$ : 0.396), perceived privacy ( $H5$ : 0.271), and perceived trustworthiness ( $H6$ : 0.516). Perceived trustworthiness is found to be a significant predictor of security ( $H7$ : 0.726;  $R^2 = 0.53$ ) and of privacy ( $H8$ : 0.604;  $R^2 = 0.36$ ).

### General discussion

The comprehensive, yet parsimonious model, developed in the present study makes an important contribution to the emerging literature on online customer behaviour by integrating variables from the trust literature and applying them to a new context of Internet banking. There are several new findings. First, trust and perceived risk are shown to be direct antecedents of intention, suggesting that uncertainty reduction is a key component in the customers' acceptance of Internet banking; thus, it deserves particular attention. Secondly, while trust has a direct effect on intentions, it also acts as an indirect antecedent through perceived risk and perceived usefulness. Thirdly, the findings related to trust, reinforced the interpretation that trust is a multi-dimensional construct and confirms

Table 3. Estimates of the structural model.

Hypothesized relationship	Estimate	Critical ratio ( <i>t</i> -value)	Result
<i>H1</i> : Perceived risk→ Behavioural intentions	−0.14	−3.34*	Supported
<i>H2</i> : Trust→ Behavioural intentions	0.37	7.19*	Supported
<i>H3</i> : Trust→ Perceived risk	−0.82	−11.77*	Supported
<i>H4</i> : Perceived security→ Trust	0.40	7.34*	Supported
<i>H5</i> : Perceived privacy→ Trust	0.27	5.36*	Supported
<i>H6</i> : Perceived trustworthiness→ Trust	0.52	8.87*	Supported
<i>H7</i> : Perceived trustworthiness→ Perceived security	0.73	10.98*	Supported
<i>H8</i> : Perceived trustworthiness→ Perceived privacy	0.60	11.90*	Supported

Note: \*Significant at  $p < 0.001$ .

three antecedents of trust: (1) a belief that the bank is reliable (perceived trustworthiness), (2) a belief that there are safety mechanisms built into the website (perceived security), and (3) a belief that transaction information will not be used without customer's consent (perceived privacy). The significant effect of perceived trustworthiness on security and privacy validates the fact that trust only occurs when customers are assured of the bank's willingness and ability to deliver obligations. Thus, for the perception of high security and privacy to exist, the customer must believe that the bank has both the ability and motivation (perceived trustworthiness) to reliably deliver online banking services. The findings also highlight the importance of using security and privacy as two distinct concepts, even though they are conceptually related.

### ***Implications for theory and research***

#### *Implications for online customer behaviour research*

The present study has significant implications for research on online customer behaviour. The potential impact of Internet-related technologies on customer behaviour has begun to puzzle researchers. While conventional customer behaviour is well described, overwhelming evidence suggests that technology-related variables have become as important as traditional factors in predicting online customer behaviour (e.g. Jarvenpaa et al., 2000; Pavlou, 2003). Findings from the present study suggest that it is crucial for researchers in customer behaviour to examine the role of uncertainty in situations where trust and perceived risk are likely to affect system use, for example virtual teams and organizations, interorganizational collaboration, and B2B/B2C/C2C transactions.

#### *Implications for trust and risk literature*

Although marketing research has experimentally shown the role of trust and risk in predicting intentions, previous views were incomplete in that they either considered trust as directly affecting intentions (McKnight, Choudhury, & Kacmar, 2002) or as influencing intentions through attitude (Jarvenpaa et al., 2000). The present study defines a process in which trust acts as both an attitudinal and control belief, and thus places trust as an antecedent of both intentions due to confident expectations, and perceived risk due to uncertainty reduction. Previous research has examined trust as a single-dimensional construct dealing primarily with risk (Gefen, 2000; Jarvenpaa & Tractinsky, 1999). The present study takes a different view, showing that trust is not a single monolithic construct, but it is rather multi-dimensional in both its measurement and structural effects, and the meaning and consequences of trust are better understood when each dimension is viewed separately.

An interesting implication of the present study is the directionality of the causal relationship between trust and perceived risk. The results suggest that trust is a significant antecedent of perceived risk. Drawing upon the findings, it may be inferred that trust also acts indirectly on intention to transact through the mediating effect of perceived risk, on which it has a direct effect. Nonetheless, future research should further examine the complex interrelationship among trust, perceived risk, and behavioural intention to reach definite conclusions.

#### *Implications for practice*

The most significant implication for the banking sector is the need to recognize that while the explicit essence of the customer's relationship with the bank is to get a useful and

efficient Internet banking service, the customer's trust and its antecedents are also an essential aspect of this relationship and contribute to its value. Banks should build websites that not only are useful and easy to use, but should also include trust-building mechanisms (Yousafzai et al., 2005). The findings also provide some guiding principle as to the relative importance of investing in a trusting relationship with customers in comparison with providing an efficient and useful Internet banking service. Additionally, in order to reduce the security concerns, effective trust-building strategies may include providing guarantees to customers to counter any fraudulent transaction. Customers may be more willing to absorb the perceived risk if they are confident that their bank stands behind the service. Simple statements and graphics stating that transactions are guaranteed may calm risk concerns. Clear graphical presentation of security systems presented in layman's terms may also calm security concerns. Furthermore, a concise and well-presented privacy policy may reduce privacy concerns.

The proposed model of trust for Internet banking describes a concrete set of factors for developing and communicating online trust that will help to transform a potential customer from a curious observer to one who is willing to perform Internet banking transactions. Such an understanding of customers' trust will provide the practitioners with a set of manageable, strategic levers to build such trust, which will promote greater acceptance of Internet banking.

### Limitations and directions for future research

There is always the issue of generalizability in customer behaviour studies, and the present study is no exception. Future research needs to determine the extent to which the findings of the present study can be extended to include other persons, settings, and times. One way of doing this is to extend the work to lesser known Internet banking websites. The data for the present study were collected from a single high street bank, and one that has a reputation as an established bank. The results might be different for pure play Internet banks, such as EGG ([www.egg.co.uk](http://www.egg.co.uk)) and CAHOOT ([www.cahoot.co.uk](http://www.cahoot.co.uk)). Secondly, the sample comprised only active Internet banking users. Whether these results can be generalized to non-users or to dormant users of Internet banking will require additional research.

A topic that requires additional research is the conceptualization of trust. In accordance with Mayer et al. (1995), specific beliefs about ability, integrity, benevolence, security, and privacy were defined as antecedents of trust. There are alternative conceptualizations of trust. Some researchers make a distinction between the beliefs that the present study calls 'antecedents of trust' and what they call 'trust' (e.g. Gefen et al., 2003). Examining this additional perspective in the context of the proposed model could shed additional light on how trust and TAM relate specifically to Internet banking and to e-commerce in general. Additional research could include other aspects of trust that have been suggested, but are not commonly applied, for instance reliability and loyalty (Hosmer, 1995), and predictability (McKnight et al., 1998). Trust may also be influenced by a variety of other elements that are beyond the relationship itself, such as social norms (Karahanna & Straub, 1999), personality-related dispositions, such as disposition to trust and belief in humanity (McKnight et al., 1998; Rotter, 1967) as well as vendor characteristics such as size and reputation (Jarvenpaa & Tractinsky, 1999).

The findings from the present study suggest that perceived risk is an important factor in the acceptance of Internet banking. Yet the operationalization of perceived risk in the present study is at an abstract level. Risk can be perceived as a second-order factor,

comprising multiple first-order dimensions, such as performance, financial, time, psychological, and social. For example, Featherman and Pavlou (2003) examined a multi-faceted model of perceived risk and theorized the relationship between the multi-dimensional construct of risk with other variables. The examination of more detailed facets of risk would be a promising area for future research.

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### References

- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179–211.
- Aladwani, A. (2001). Online banking: A field study of drivers, development challenges, and expectations. *International Journal of Information Management*, 21(3), 213–225.
- Anderson, C., & Gerbing, W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423.
- Bagozzi, R., & Yi, Y. (1989). The degree of intention formation as a moderator of the attitude–behaviour relationship. *Social Psychology Quarterly*, 52(4), 266–279.
- Bauer, R. (1967). Consumer behaviour as risk taking. In D. Cox (Ed.), *Risk taking and information handling in consumer behavior*. Cambridge, MA: Harvard University Press.
- Belanger, F., Hiller, S., & Smith, J. (2002). Trustworthiness in electronic commerce: The role of privacy, security and site attributes. *Journal of Strategic Information Systems*, 11(3/4), 245–270.
- Benassi, P. (1999). Truste: An online privacy seal program. *Communication of the ACM*, 42(2), 56–57.
- Bestavros, A. (2000). Banking industry walks ‘tightrope’ in personalization of web services. *Bank Systems and Technology*, 37(1), 54–56.
- Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, 19(1), 211–241.
- Bhimani, A. (1996). Securing the commercial internet. *Communications of the ACM*, 39(6), 29–35.
- Boss, W. (1978). Trust and managerial problem solving revisited. *Group and Organization Studies*, 3(3), 331–342.
- Chellappa, R. (2003). *Consumers’ trust in electronic commerce transactions* (Working Paper, ebizlab). Marshall School of Business, USC.
- Cheskin Research, Studio Archetype/Sapient. (1999). *eCommerce trust study*. Retrieved May, 2007, from <http://www.studioarchetype.com/cheskin/>
- Cheung, C., & Lee, O. (2000). Trust in internet shopping: A proposed model and measurement instrument. *Proceedings of the 6th Americas Conference on IS*. Long Beach, CA.
- Daniel, E. (1999). Provision of electronic banking in the UK and the republic of Ireland. *International Journal of Bank Marketing*, 17(2), 72–82.
- Dayal, S., Landesberg, H., & Zeisser, M. (1999). How to build trust online. *Marketing Management*, 8(3), 64–69.
- Deutsch, M. (1960). The effect of motivational orientation upon trust and suspicion. *Human Relations*, 13(1), 123–140.
- Doney, M., & Cannon, P. (1997). An examination of the nature of trust in buyer-seller relationship. *Journal of Marketing*, 61(2), 35–51.
- Dwyer, F., Schurr, H., & Oh, S. (1987). Output sector munificence effects on the internal political economy of marketing channels. *Journal of Marketing Research*, 24(4), 347–358.

- Featherman, M., & Pavlou, P. (2003). Predicting e-services adoption: A perceived risk facets perspective. *International Journal of Human-Computer Studies*, 59(4), 451–474.
- Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Ganesan, S. (1994). Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing*, 58(2), 1–19.
- Gefen, D. (2000). E-commerce: The role of familiarity and trust. *Omega*, 28(6), 725–737.
- Gefen, D. (2002). Customer loyalty in e-commerce. *Journal of the Association for Information Systems*, 3(2), 27–51.
- Gefen, D., Rao, V., & Tractinsky, N. (2003). Conceptualization of trust, risk and their relationship in electronic commerce: The need for clarifications. *Proceedings of the 36th Hawaii International Conference on IS*.
- Goodwin, C. (1991). Privacy: Recognition of a consumer right. *Journal of Public Policy Marketing*, 10(1), 106–119.
- Hawes, J., Kenneth, E., & Swan, J. (1989). Trust earning perceptions of sellers and buyers. *Journal of Personal Selling and Sales Management*, 9(1), 1–8.
- Hoffman, D., Novak, T., & Peralta, M. (1999). Building consumer trust online. *Communications of the ACM*, 42(4), 80–85.
- Hosmer, L. (1995). Trust: The connecting link between organizational theory and philosophical ethics. *Academy of Management Review*, 20(2), 379–403.
- Jarvenpaa, S., & Tractinsky, N. (1999). Consumer trust in an internet store: A cross-cultural validation. *Journal of Computer Mediated Communication*, 5(2), 1–36.
- Jarvenpaa, S., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an internet store. *Information Technology and Management*, 1(1–2), 45–71.
- Johnson-George, C., & Swap, W. (1982). Measurement of specific interpersonal trust: Construction and validation of a scale to assess trust in a specific other. *Journal of Personality and Social Psychology*, 43(6), 1306–1317.
- Kalakota, R., & Whinston, B. (1997). *Electronic commerce: A manager's guide*. Reading, MA: Addison Wesley.
- Karahanna, E., & Straub, D. (1999). The psychological origins of perceived usefulness and ease-of-use. *Information and Management*, 35(4), 237–250.
- Kline, R. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford Press.
- Lee, M., & Turban, E. (2001). A trust model for consumer internet shopping. *International Journal of Electronic Commerce*, 6(1), 75–91.
- Lewicki, R., & Bunker, B. (1995). Trust in relationships: A model of trust development and decline. In B. Bunker & J. Rubin (Eds.), *Conflict, co-operation, and justice*. San Francisco: Jossey-Bass.
- Marcella, A. (1999). *Establishing trust in vertical markets*. Altamonte Springs, FL: The Institute of Internal Auditors.
- Mayer, R., Davis, J., & Schoorman, F. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20(3), 709–734.
- McKnight, D., Choudhury, V., & Kacmar, C. (2002). The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *Journal of Strategic Information Systems*, 11(3), 297–323.
- McKnight, D., Cummings, L., & Chervany, N. (1998). Initial trust formation in new organizational relationships. *Academy of Management Review*, 23(3), 472–490.
- Moorman, C., Deshpande, R., & Zaltman, G. (1993). Factors affecting trust in marketing research relationships. *Journal of Marketing*, 57(1), 81–101.
- Nowak, G., & Phelps, J. (1997). Direct marketing and the use of individual-level consumer information: Determining how and when privacy matters. *Journal of Direct Marketing*, 11(4), 94–109.
- Pavlou, P. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 69–103.
- Ratnasingham, P. (1998). The importance of trust in electronic commerce. *Internet Research*, 8(4), 313–321.
- Rotter, B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality and Social Psychology*, 35(4), 651–665.



Rousseau, M., Sitkin, B., Burt, S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, 23(3), 393–404.

Schenk, D., Vitalari, P., & Davis, S. (1998). Differences between novice and expert system analysts: What do we know and what do we do? *Journal of Management Information Systems*, 15(1), 9–50.

Schurr, P., & Ozanne, L. (1985). Influences on exchange processes: Buyers’ preconceptions of a seller’s trustworthiness and bargaining toughness. *Journal of Consumer Research*, 11(4), 939–953.

Sitkin, S., & Weingart, L. (1995). Determinants of risky decision making behavior: A test of the mediating role of risk perceptions and risk propensity. *Academy of Management Journal*, 38(6), 1573–1592.

Urban, G., Sultan, F., & William, Q. (2000). Making trust the center of your internet strategy. *Sloan Management Review*, 1(42), 39–48.

Williamson, O. (1993). Calculativeness, trust and economic organization. *Journal of Law and Economics*, 36(1), 453–502.

Yousafzai, S., Pallister, J., & Foxall, G. (2003). A proposed model of e-trust for electronic banking. *Technovation*, 23(11), 847–860.

Yousafzai, S., Pallister, J., & Foxall, G. (2005). Strategies for building and communicating trust in electronic banking: A field experiment. *Psychology and Marketing*, 22(2), 181–201.

Appendix: Measurement scale

Variable	Scale item	Source
Perceived risk	Whilst performing Internet banking transactions, I would rate the risk of financial loss as: <i>Very Likely to Occur</i> → <i>Very Unlikely to Occur</i>	Sitkin and Weingart (1995)
	Whilst performing Internet banking transactions, I would rate the risk of losing personal information as: <i>Very Likely to Occur</i> → <i>Very Unlikely to Occur</i>	Sitkin and Weingart (1995)
	My decision to perform banking transaction on the Internet presents: <i>A Significant Risk</i> → <i>A Significant Opportunity</i>	Jarvenpaa et al. (2000)
Trust	I trust Internet banking	New item
	I trust my bank	New item
	I trust the Internet for banking transactions	New item
Perceived security	I believe my Internet banking transaction information will not be lost during an online session	New item
	I believe my Internet banking transaction information will only reach the target bank account	Chellappa (2003)
	While using Internet banking, I believe that the security system will confirm my identity before <i>disclosing</i> account information	New item
	While using Internet banking, I believe that the security system will confirm my identity before <i>processing</i> transactions	New item
	While using Internet banking, I believe that the security system does not allow unauthorized access to the account	Chellappa (2003)
	While using Internet banking, I believe that the security system stops any unauthorized changes to a transaction	Chellappa (2003)
	While using Internet banking, I believe that the security system provides a secure environment in which to bank	New item

(Continued)



## Appendix. Continued.

Variable	Scale item	Source
Perceived privacy	While using Internet banking, I believe that I know exactly what information is collected	Chellappa (2003)
	I believe my Internet banking transaction information will only be used for the purpose of the original transaction	New item
	I believe my Internet banking transaction information will be shared with others with my consent	Chellappa (2003)
	While using Internet banking, I believe that I have full knowledge of the parties that can access my online account information	Chellappa (2003)
	While using Internet banking, I believe that I control the use of my information	Chellappa (2003)
Perceived ability	I believe that my bank provides an excellent Internet banking service	Gefen (2002)
	I believe that my bank is processing my transactions accurately and on time	New item
	I believe that my bank provides 24 hour access to Internet banking	New item
Perceived integrity	I believe that my bank is fair with its Internet banking customers	McKnight et al. (2002)
	I believe that my bank has consistent online practices and policies	New item
Perceived benevolence	I believe that my bank will repay the money if it is taken from my account through unauthorized transactions	New item
	I believe that my bank is acting in my best interest	McKnight et al. (2002)