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**CONCEPTUALIZATION OF TRUST AND COMMITMENT, AND UNDERSTANDING
THE RELATIONSHIPS BETWEEN TRUST, COMMITMENT AND WILLINGNESS TO
TRY INTERNET BANKING SERVICES**

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Abstract

This paper examines trust and commitment, their antecedents and consequences in the context of Internet banking based on data collected from a survey of 500 Singapore undergraduates. Following the establishment of a conceptual model that links trust and commitment to willingness to try Internet banking, the empirical findings show that higher levels of trust and commitment are significantly associated with greater willingness to try Internet banking. The paper also investigates security, ethics, privacy, openness, speed of response, quality of information, regulatory control, technology advancement and reputation as determinants of trust. Security, regulatory control, technology advancement and reputation are found to be significant determinants of trust. This study concludes with a discussion on the implications of the findings for Internet banks.

Key Words: Trust, Internet banking, Commitment, Willingness to Try.

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1 Introduction

Liberalization and deregulation have brought down the boundaries of the banking industry, allowing new entrants and enabling more competition (Bradley and Stewart, 2003). The past four decades have witnessed rapid technological innovation, changing the structure and the nature of banking (Flavian *et al.*, 2005). The Internet has had the greatest impact, giving rise to Internet banking.

Internet banking involves consumers using the Internet to access their bank websites and accounts to undertake a wide variety of banking transactions. In this paper, the definition of Internet banking services is restricted only to services, excluding transactions of income-generating financial instruments of any kind.

Many studies have shown that the Internet presents various possibilities for banks to gain competitive advantage. As noted way back in 1999, this can only be achieved if there is rapid customer migration to online banking and before banks can see considerable savings in operating costs, there must be an acceptance of the technology, as well as confidence in the security of the heavily invested Internet banking (Sathye, 1999).

Today, banks still face the same obstacles as noted by Sathye (1999). Despite the efforts of banks to develop better Internet banking systems, these systems remain largely unnoticed by customers, and are seriously underused in spite of their availability (Orr, 2003; Wang *et al.*, 2003). One of the most cited reasons is the lack of consumer trust (Kim and Prabhakar, 2004; Culnan and Armstrong, 1999) which discourages consumers from entering into exchange relationships with Internet banks (Orr, 2003; Cheung and Lee, 2000). More recent studies (Lee *et al.*, 2005, Kim and Prabhakar, 2004, White and Nteli, 2004) cited among other factors that explain why the increase of Internet usage for banking purposes has not increased to the satisfaction of banks relates to a lack of

trust by the consumer and the consumer fear about security, despite the media coverage and the technical and verbal reassurances provided by the banks, still preys heavily on consumer's mind.

Despite the importance of trust in Internet banking (Quelch and Klein, 1996), few theory-guided empirical research studies have been undertaken to understand the nature of trust, its antecedents, and its consequences in the context of Internet banking. While the importance of trust in Internet banking is an emerging area of interest in management research, extant literature on Internet banking is scarce, and it focuses on general issues (Mukherjee and Nath, 2003). Most research papers lend qualitative insights, exploring Internet banking as a phenomenon and logical process rather than as a model with a set of determinable inputs and outputs. They ignore many potentially important constructs suggested by the rich but distant literature on trust (Tan and Teo, 2000; Liao *et al.*, 1999; Daniel, 1999). Thus, the conceptualization of a more comprehensive model of trust and its antecedents in the context of Internet banking is useful.

This study conducted in 2005 is based on a survey of undergraduates from Nanyang Technological University, National University of Singapore and Singapore Management University in Singapore who are majoring in either business or engineering studies. The respondents are aged between 21 and 23, and would be joining the work force, in one or two years' time. Most of the undergraduates are experienced in the use of Internet due to their educational exposure. With their strong foundation in the necessary skills, they are considered future potential Internet banking users. Therefore, the results of such a survey would be useful, especially for Internet banks. The study of understanding Internet banking adoption and use behavior from the perspective of undergraduates has been carried out in Hong Kong (Chan and Lu, 2004) but to date, no studies have been done in Singapore although a study involving working adults relating to understanding why users are more

accepting of Internet banking services based on certain characteristics was carried out by Gerrard and Cunningham (2003).

The objectives of this study are threefold: (1) to develop a model of Internet banking involving the conceptualization of trust and commitment, (2) to discover the differences in the levels of importance and impact on trust among the different antecedents in the context of Internet banking, and (3) to discover the relationships between trust, commitment and willingness to try in an Internet banking context.

2. Trust and Internet Banking

Trust is a highly complex and multi-dimensional phenomenon (Lewis and Weigert, 1985; Butler, 1991; Barber, 1983). Its importance to interpersonal and commercial relationships is evidenced by the plethora of research efforts within various disciplines such as social psychology (Deutsch, 1960; Lindskold, 1978; Lewicki and Bunker, 1995), sociology (Lewis and Weigert, 1985; Strub and Priest, 1976), economics (Dasgupta, 1988; Williamson, 1991) and marketing (Anderson and Weitz, 1989; Dwyer *et al.*, 1987; Ganesan, 1994; Moorman *et al.*, 1992; 1993). A large stream of literature has emphasized the role of trust as being central to the success of customer relationship building, in all contexts of relational exchanges (Achrol, 1991; Becker, 1960; Dwyer *et al.*, 1987; Morgan and Hunt, 1994).

Trust has been defined in various ways in literature. Morgan and Hunt (1994) state that trust exists “when one party has confidence in an exchange partner’s reliability and integrity”. Mayer *et al.* (1995) defined trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party”. Simply put, trust is the willingness

of an individual to behave in a manner that assumes another party will behave in accordance with expectations in a risky situation (Deutsch, 1960).

In this paper, we define trust in the Internet banking context as a banking consumer's willingness to confidently rely on the exchanger partner and their actions in terms of their online environment. Our definition draws on Rotter's (1967) classic view that trust was a "generalized expectancy held by an individual that the word of another ... can be relied on".

Trust, according to Spekman (1988), is so important to relational exchange that it is "the cornerstone of the strategic partnership" between the bank and its Internet customer. Trust is a vital antecedent for purchasing online (Morrison and Firmstone, 2000; Urban *et al.*, 2000; McCole and Palmer, 2001), and is a vital ingredient for relationship marketing in general (Morgan and Hunt, 1994). But the question of trust may be even more important in the virtual world than it is in the real world. This is because the parties in an Internet transaction need not be in the same physical location, eliminating the possibility of utilizing factors such as handshakes and body language to gauge and to build trust (Clarke, 1997).

2.1 Dimensions of Trust

The literature and discourse on trust seems infinite. Works of Gabarro (1978), Jennings (1971) and Butler (1991) reveal the ten most cited dimensions of trust. The commitment-trust theory of relationship marketing by Morgan and Hunt (1994) also proposes certain variables that contribute to the achievement of trust. In this paper, we draw heavily on the two different yet similar studies in the context of Internet banking. Dimensions of trust are adapted only if they involve the context of Internet banking.

This paper employs a quantitative modeling framework to develop an empirical model that embodies the components of trust in Internet banking.

Security is defined as the protection of data against accidental or intentional disclosure to unauthorized persons (Grandinetti, 1996). Ravald and Gronroos (1996) showed that security builds trust. Numerous studies have shown that strong concern about security is one common factor related to the unwillingness to use Internet channels for commerce (White and Nteli, 2004; Rotchanakitmuai, S., and Speece, M., 2003; Black *et al.*, 2001; Udo, 2001). Hence, we posit that:

H₁: There is a positive relationship between an Internet bank's perceived security and the consumer's trust in that Internet bank.

Ethics is defined as the possibility that banks would give customers incomplete product information, divulge the customers' confidential personal information, or sell customer information to other parties without first consulting the customer (Mukherjee and Nath, 2003). Ethics and honesty in a broad sense, which are aspects of good business morality, build trust (Huemer, 1998). Many recent studies suggest that several ethical issues continue to hinder the development of e-commerce; (Donthu and Garcia, 1999). Therefore, we hypothesize as follows:

H₂: There is a positive relationship between the perceived ethics of a bank and the consumer's trust in that Internet bank.

According to Martin (1973), privacy refers to the rights of individuals and organizations to determine for themselves when, how, and to what extent information about them is to be transmitted to others. From this definition, we conceptualize that privacy is the consumers' perception of the ability of banks to protect their personal information collected from the electronic transactions against unauthorized use or disclosure (Mukherjee and Nath, 2003). Thus, it is proposed that:

H₃: There is a positive relationship between perceived privacy and a consumer's trust in that Internet bank.

Communication can be broadly defined as the formal and informal sharing of meaningful and timely information between partners (Zineldin and Jonsson, 2000). As Anderson and Narus (1990) and Morgan and Hunt (1994) noted, past communication is an antecedent to trust. This mirrors Wong et al., (2003) and Anderson and Weitz's (1989) finding that communication possesses a positive relationship to trust in channels, as they foster trust by assisting in resolving disputes and ambiguities, and aligning perceptions and expectations as noted by Etgar (1979).

In this paper, we decompose the communication construct into several variables which can be deemed to be the main components that affect the communication channel. The variables used are adapted from Mukherjee and Nath's (2003) Model of Trust, which are openness, speed of response and quality of information. Hence, we posit that:

H₄: There is a positive relationship between the openness of the communication channel and the consumer's trust in that Internet bank.

H₅: There is a positive relationship between the speed of response of the communication channel and the consumer's trust in that Internet bank.

H₆: There is a positive relationship between the quality of information transmitted and the consumer's trust in that Internet bank.

Opportunistic behavior is derived from opportunism in the theory of Transaction Cost Economics (TCE) by Williamson (1985). In our study, we apply the level of perceived regulatory controls as a measure of the construct of opportunistic behavior in Internet banking.

Regulatory control, in our context, refers to the perception that target customers have regarding the degree and effectiveness of regulatory control to minimize opportunistic behavior. Lee

and Turban (2001) showed that the integrity of Internet banks and adherence to expected roles and obligations depend on the extent of regulatory control, which is a major determinant of trust in Internet banking.

Using conclusions from the cited studies, we propose that:

H₇: There is a positive relationship between the regulatory control and a consumer's trust in that Internet bank.

According to Shih and Fang (2006), Ndubisi and Sinto (2006), and Daniel and Storey (1997), the ability of the Internet banking service also influences the trust in subscribing to the service. In our study, technological advancement refers to the target customers' perceptions of the ability of Internet banks to stay technologically advanced and keep providing proper services. Therefore, we hypothesize that:

H₈: There is a positive relationship between the technological advancement of an Internet bank and a consumer's trust in that Internet bank.

Reputation, in this study, is defined as "overall quality or character as seen or judged by people in general", as adapted from Malaga (2001). Wilson (1995) argues that "reputation for performance becomes a measure of trust when the partner is an untested commodity". It is also suggested that reputation is an element of trust, and that many decisions based on "trust" in reality may be judgments related to a party's "reputation" (Achrol, 1991). We therefore posit that:

H₉: There is a positive relationship between the reputation of an Internet bank and a consumer's trust in that Internet bank.

2.2 Trust, Commitment and Internet Banking

Commitment is defined as a desire to have a continued relationship and an effort to ensure its continuance (Walker and Johnson, 2005; Wilson, 1995; Anderson and Narus, 1984; Morgan and Hunt,

1994) or as a pledge for relational continuity between exchange partners (Dwyer *et al.*, 1987). According to one view (Morgan and Hunt, 1994), commitment is an affective state of mind an individual or partner has towards a relationship with another individual or partner. This kind of commitment is called affective commitment.

The other view sees commitment as being more behavioral than affective (Flavian *et al.*, 2005; Wetzels *et al.*, 1998). This form is referred to as calculative commitment and stems from a cognitive evaluation of the instrumental worth of a continued relationship with the organization. All gains and losses, plusses and minuses or rewards and punishments are added up (Morgan and Hunt, 1994).

In this paper, our research is grounded in the commitment-trust theory of relationship marketing, originally proposed by Morgan and Hunt (1994). In marketing, it is agreed that commitment among partners in business relationships produces valuable outcomes. Thus, partners seek to develop and maintain commitment as a relationship attribute (Wang *et al.*, 2003; Wong and Sohal, 2002; Rowden, 2000; Boyle, 1997). Commitment, if neglected and lacking, will cause relationships to end rapidly (Wetzels *et al.*, 2000). In short, commitment and trust lead directly to cooperative behavior which is conducive to the adoption of Internet banking. Thus, we posit that:

H₁₀: There is a positive relationship between a consumer's trust towards an Internet bank and the consumer's willingness to try Internet banking.

H₁₁: There is a positive relationship between a consumer's affective commitment towards an Internet bank and the consumer's willingness to try Internet banking.

H₁₂: There is a positive relationship between a consumer's calculative commitment towards an Internet bank and the consumer's willingness to try Internet banking.

The research framework and the twelve hypotheses are summarized in Figure 1.

3. Research Methodology

The methodology employed in the study can be summarized as follows.

3.1 Sample

Our sample for this research is made up of undergraduates from Singapore. Undergraduates are used in this research as they serve to form a large market of potential future Internet banking users. The tertiary institutions included in the study are the National University of Singapore, Nanyang Technological University (Singapore) and Singapore Management University. We have identified two major faculties to represent the population, namely engineering and business. Stratified sampling is used to ensure a fair distribution across the sample of 500 undergraduates.

Recommendations for sample size are typically based on the complexity of the model at hand. This is reflected in the number of parameters requiring estimation. Bentler and Chou (1988) suggested five respondents per parameter estimated. Using their recommendation, our model which consists of thirteen constructs and forty parameters then requires a minimum sample size of 200. Hence, our sample size of 500 Singaporeans is enough for the purpose of this study.

3.2 Research Questionnaire

The objective of this study is to discover the differing levels of importance of the antecedents and their impact on trust in the context of Internet banking. Given that the antecedents are unobservable, a survey was used to obtain primary data. The survey questionnaire comprises 40 items measured on a 7-point Likert scale (where 1 = extremely disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither disagree nor agree, 5 = somewhat agree, 6 = agree and 7 = extremely agree). Each construct (i.e., security, ethics, privacy, openness, speed of response, quality of information, regulatory control, technology advancement, reputation, affective commitment, calculative

commitment and willingness to try) is measured by three items, except for trust which is measured by four items. The survey questionnaire is shown in the Appendix.

A pilot test was conducted prior to the actual administration of the questionnaire to eliminate ambiguity in the items. The pilot sample consisted of 40 undergraduates. Respondents who took part in the pilot test were excluded from the final sample to avoid the testing effect which could impact on internal validity (Sekaran, 1992).

The questionnaire was administered in 2005 at the respective universities and yielded a final response rate of 66.67% (500 out of 750). Referral sampling was used to obtain the data. After the data were collected, the constructs were first assessed for reliability using Cronbach's Alpha. It ranged from a low of 0.601 for calculative commitment to a high of 0.867 for ethics. Hence, the constructs can be deemed to be reliable as they have Cronbach's Alpha above the rule-of-thumb of 0.60. Next, factor analysis was conducted on the thirteen constructs to assess their validity. Questions 7 and 12 had factor loadings of less than 0.5 and were excluded from further analysis. All the other questions loaded highly onto their respective constructs.

3.3 Statistical Methods

Two regression analyses were performed to test: (1) the relationship between trust in Internet banking and its nine predictors (i.e., security, ethics, privacy, openness, speed of response, quality of information, regulatory control, technology advancement and reputation), and (2) the relationship between willingness to try Internet banking and trust, affective commitment and calculative commitment.

4. Results and Discussion

The results of the first regression analysis are summarized in Table 1 (Panel A). As shown, the model is statistically significant with a p-value of 0.001. It also has a good fit, as indicated by an R^2 of 0.614.

Furthermore, four out of the nine independent variables are significant predictors of trust in Internet banking (with p-values of 0.001). They are security, regulatory control, technological advancement and reputation. From the standardized coefficients, it is evident that technological advancement is the most important determinant of trust, followed by regulatory control. These findings are congruent with reports that showed consumer skepticism about Internet banking safety subsiding as banks adopted more secure software to protect transactions (The Straits Times, 2004). Moreover, it is noted that regulatory control in opportunistic behavior of banks has a significant positive impact on their level of trust.

Generally, increased levels of security, regulatory control, technology advancement and reputation are associated with increased levels of trust. Hence, H_1 , H_7 , H_8 and H_9 are supported by the data.

The results of the second regression analysis focusing on willingness to try Internet banking are summarized in Panel B of Table 1. As shown, the model is statistically significant with a p-value of 0.001. It also has a good fit, as indicated by an R^2 of 0.521. All the independent variables (i.e., trust, affective commitment and calculative commitment) are statistically significant with p-values of 0.001. In particular, increased levels of trust, affective commitment and calculative commitment are associated with an increased willingness to try Internet banking. Thus, H_{10} , H_{11} , and H_{12} are supported by the data. Finally, as can be seen from Table 1 (Panel B), trust is the strongest predictor of willingness to try (with the highest standardized coefficient of 0.501).

Collectively, the regression results and findings have important implications for banks. First, they help Internet banks identify the significant determinants of trust. The finding that the strongest determinant of trust is technological advancement is consistent with the findings of Daniel and Storey's (1997). It is therefore imperative for Internet banks to continually improve their Internet banking systems in order to increase trust in Internet banking.

For example, Internet banks can provide a competent electronic system, such as a system with high network and download speeds, navigability and connectivity (Wang *et al.*, 2003; Lee and Turban, 2001). Banks could also develop and improve their systems according to the needs and wants of potential customers. Development Bank of Singapore's (the largest local bank in Singapore) introduction of its Short Message System (SMS) payment scheme has illustrated its willingness to update its Internet banking system for the convenience of its customers (Poon, 2004).

Our findings also show that security is a significant determinant of trust. This supports Udo's (2001) finding that the lack of security is the primary reason for not using Internet banking. It is also in line with the Singapore government's ongoing effort of fine-tuning the security of Internet transactions.

Generally, Internet banks can ensure a secure online banking system by using security features on the web site (Stratford, 1999) or firewalls, filtering, routers, call-back modems, encryption, biometrics, smart cards, digital certification and authentication (Mukherjee and Nath, 2003). There have also been many improvements in security features in recent years, such as Citibank's introduction of Dynamic PIN-Pad (Poon, 2004).

Regulatory control is found to have a strong positive influence on trust. Therefore, banks should ensure proper regulatory control and dissemination of authentic information. Coherence and

transparency must be communicated and used to formulate strategic intentions. Strong regulatory control can minimize the perception of opportunistic behavior by Internet banks.

This study also shows that reputation is a significant determinant of trust in Internet banking. Endorsement is a good way to enhance reputation. If the customer trusts the endorsing third party and there is a strong tie between the bank and the third party, the trust can be transferred (Heider, 1958). Li *et al.* (2001) found that customers have more trust in Internet banks that have better known third party referrals than those with fewer or unknown third party referrals, other factors remaining constant.

5 Conclusion

Our findings present implications for Internet banks. To increase the number of Internet banking users, it is imperative for Internet banks to ensure a secure Internet banking system. Banks should also focus on constant technological upgrading efforts, and coherence and transparency in business practices. Reputation can be enhanced through third party endorsements, and by providing excellent customer service.

Furthermore, Internet banks may wish to effectively enhance trust and commitment so as to increase the customers' willingness to try Internet banking.

Our results and findings should be interpreted in light of the following limitations that are inherent in this research. First, the survey respondents in this study are undergraduates; hence, caution should be exercised in generalizing these results to the general population. Second, the study focuses on measuring perceptions of trust rather than the actual trustworthiness of Internet banks.

The above limitations also provide directions for future research. For example, future studies can address the issue of actual trustworthiness from a dyadic perspective, by incorporating data

collected from both bank managers and bank customers into the same analysis (see Mukherjee and Nath, 2003). Moreover, future research endeavors may consider samples from a representative cross-section of the general population to enhance external validity.

In addition, future research can examine whether system characteristics (such as screen design and feedback) have any influence on the acceptance of Internet banking. The use of self-report scales to measure the variables in this study suggests the possibility of a common method bias for some of the results. Future research can employ both objective and subjective measures, and examine the correspondence between them.

In our study, we considered nine factors that affect trust, which in turn affects willingness to try. There may be more antecedents to trust and willingness to try that future research can look at.

Table 1

A. Regression results with trust as dependent variable

Variable	Coefficient	Standardized Coefficient	t-statistic	p-value
(Constant)	1.817	-	4.825	0.001
Security	0.208	0.238	6.901	0.001
Ethics	0.016	0.015	0.417	0.677
Privacy	0.036	0.033	0.881	0.379
Openness	0.063	0.061	1.763	0.079
Speed of response	0.002	0.002	0.061	0.952
Quality of information	0.004	0.004	0.100	0.920
Regulatory control	0.222	0.221	-5.597	0.001
Technology advancement	0.277	0.308	7.719	0.001
Reputation	0.149	0.148	3.813	0.001

Model F-statistic = 86.513 (p-value = 0.001); $R^2 = 0.614$

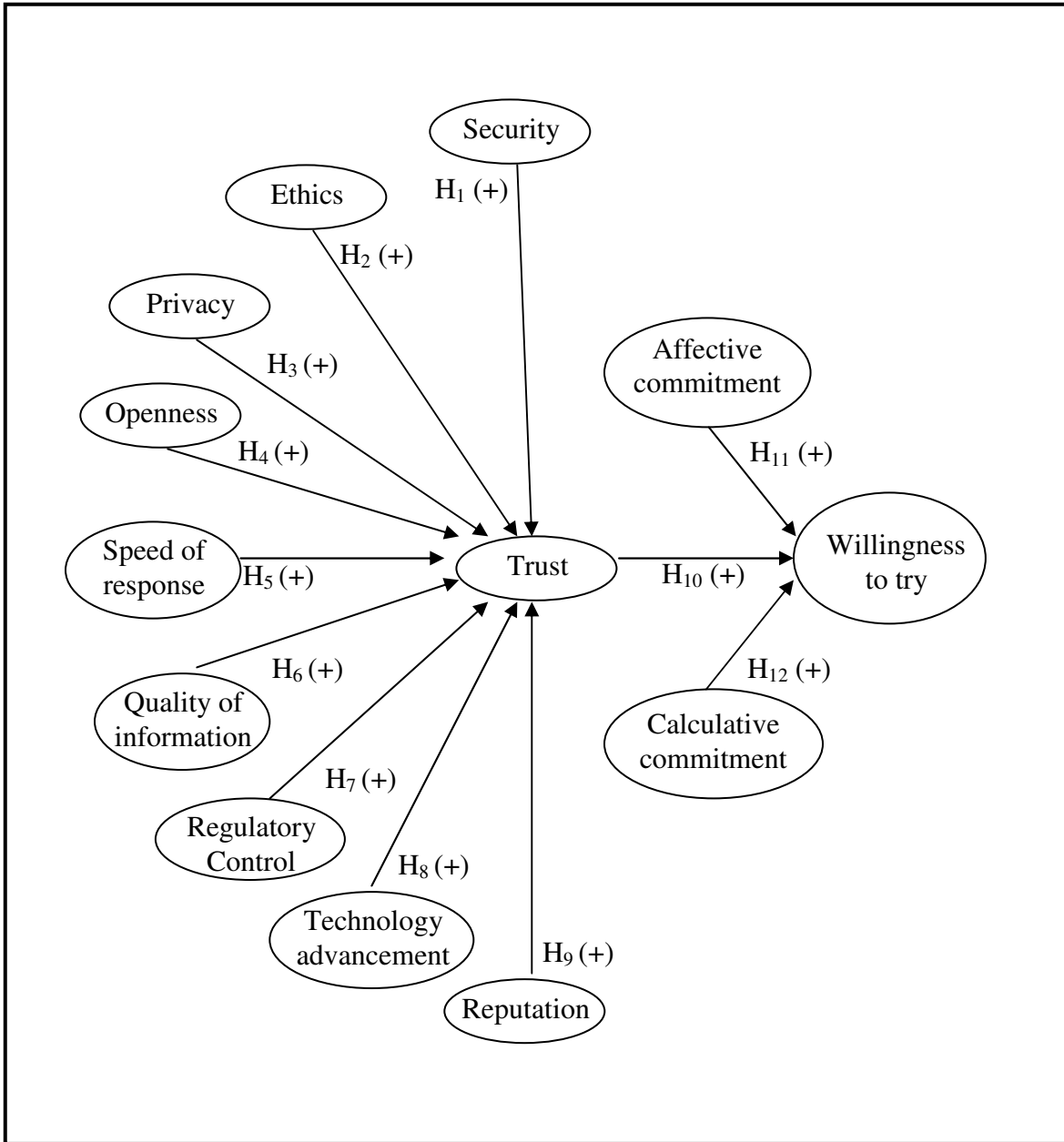
B. Regression results with willingness to try as dependent variable

Variable	Coefficient	Standardized Coefficient	t-statistic	p-value
(Constant)	0.804	-	3.899	0.001
Trust	0.558	0.501	14.635	0.001
Affective commitment	0.170	0.178	3.973	0.001
Calculative commitment	0.219	0.224	5.306	0.001

Model F-statistic = 179.857 (p-value = 0.001); $R^2 = 0.521$

Figure 1

Research framework and hypotheses



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