

# **MODELS OF TRUST IN BUSINESS-TO-CONSUMER ELECTRONIC COMMERCE**

## *A Review of Multi-Disciplinary Approaches*

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**Abstract:** The issue of trust in Internet-based business-to-consumer electronic commerce has been explored from a number of different perspectives. The current body of research is diverse and fragmented. This paper critically reviews recently published models pertaining to trust in business to consumer e-commerce. For analytical purposes we categorize the literature in three main streams: technological, design and sociological/psychological. Based on our analysis and our own empirical observations we raise four main areas of concern that warrant further research attention: an oversimplification of the trust concept, a uni-directional view of trust, discipline centred approaches to modelling trust and a lack of empirical grounding and testing. In the light of these concerns we recommend avenues for further research

## **1. INTRODUCTION**

We continue to witness the growth in the global business community of the Internet as a platform for electronic commerce. Much attention is dedicated to the Web, its potential and the risks that it holds for marketing and selling products and services online. In the context of business-to-consumer (B2C) electronic commerce, the consumer not only compares product and pricing alternatives, but also the risks of conducting the transaction online. The notion of trust is especially relevant in the online context where the intended purchase may be from a supplier that is operating in a different country, time zone, currency and legal system. In the B2C context products are typically paid for in advance and only received after the

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transaction. Consequently the issue of trust in Internet-based B2C electronic commerce is receiving much research attention.

Research into trust in e-commerce has been approached from different perspectives and as a result the current body of research is diverse and fragmented. We draw on this rich interdisciplinary base to rationalise the current thinking pertaining to trust in B2C contexts.

We believe that the research within this area has reached a level of maturity where it now requires a more integrative approach to foster a richer understanding for both practitioners and researchers alike. Indeed, we outline some of the dangers of a continued fragmented approach, especially the conceptual deficiencies that prevent a more cohesive understanding of B2C trust. Within this paper we analyse a number of current models of B2C trust and critically reflect on the current streams of research. We highlight main areas of concern in the light of our review and also in the light of our own empirical observations.

This paper is structured as follows. Firstly we revisit the notion of trust in the B2C context and we isolate recent streams of research in this area. We then categorise sixteen models of B2C trust within the main streams of research. This categorization enables us to reflect critically on a number of conceptual concerns and omissions due to the fragmented approach of much of the current research. We discuss our concerns and highlight specifics that we argue need to be addressed in further research efforts in this field.

## **2. METHODOLOGY**

A preliminary literature review of B2C trust research was carried out by drawing on recent studies from prominent peer reviewed journals and conference proceedings. The review not only centred on publications addressing B2C trust models, but also closely related topics. In preparation for the review, we liaised with a number of research colleagues in the field in order to identify prominent outlets for trust publications in e-commerce. This preliminary review yielded in excess of 50 relevant studies of B2C e-commerce trust models. Although we do not claim this to be an exhaustive review our approach was to be inclusive rather than exclusive. In examining the results of the preliminary review we noted that there was considerable overlap between the different studies. Many of the models were extrapolations or interpolations of previously published concepts and models. Our primary focus was on identifying novel and original studies as opposed to adaptations and extensions of existing models. These studies were subsequently analysed by the authors both independently and collectively. This analysis was complemented by the reviewers

independently in light of their current empirical fieldwork. This approach compares to similar reviews of this nature (e.g. Tornatzky & Klein, 1982). A greater emphasis was placed on research studies that displayed a high level of rigour in terms of methodology in its establishment of concepts and models.

We found we could classify the literature review into three main focal areas: technological, design and sociological/psychological perspectives. This again emphasised the interdisciplinary approach we adopted within this study indicating the main thrusts and models of B2C e-commerce trust. It also allowed us to question some of the contemporary thought emanating from the current literature. We expand on these classifications in the following sections.

## **2.1 Trust in a B2C Context**

There is no consensus in the current literature as to a commonly accepted definition for the notion of trust in the B2C context. This observation is echoed by McKnight et al. (2001) where they state "there is no agreed upon definition of trust due to different definitions coming out of varying disciplines". Ambrose (1998) proposes that trust is related to task risks, that is trust varies depending on the task the user is undertaking. Cheung et al. (2001) argue that there is confusion by some between the understanding of trust as an outcome and antecedents. This problem manifests itself in testing for effectors of the trust in design and the marketing of the B2C web site when the antecedent decision to purchase has already been made in the individual's antecedents of trust. Cheung (2001) also recognise two effectors of Internet trust, trustworthiness of Internet vendors and their external environment, and the division of types of trust proposed by personality theorists, sociologists and economists, and social psychologists.

In an attempt to collate the varying factors affecting trust, Papadopoulou (2001) discusses different trust categories of system shopping process, vendor, individuals and firm trust in e-commerce, separating out consumer and vendor related trust.

No matter what the context, discipline or the trust beliefs of the consumer, most researchers agree that trust in an e-commerce, B2C relationship is related to risk, or more precisely, inversely related to risk. It is from this perspective that we will consider trust in a B2C, Internet based, e-commerce relationship.

There is little correlation between the studies and the independence of the variables posed as being responsible at some level for the mistrust in e-commerce technologies. The area of e-commerce itself is multi-disciplinary and requires the integration of technology, visual design, business acumen,

human computer interaction, sociological and psychological considerations. To this end the research approaches seem to have followed the discipline from which the author's orientation belongs.

It is from this position that we bring together the research and evaluations that have been undertaken to date. We will now analyse and discuss the perspectives of B2C trust, the pertinent models that exist in recent literature and the major issues raised.

## **2.2 Perspectives of B2C Trust**

A number of perspectives on B2C trust were apparent from the literature. These emanate from the variety of disciplines that have an interest in electronic commerce and B2C electronic commerce in particular. From our preliminary review we have isolated three main perspectives across the various disciplines for categorizing the research studies pertaining to B2C trust. These are technological, design and sociological/psychological perspectives. We will provide a brief overview of each of these research streams by focusing on some central areas of emphasis.

### **2.3 B2C Trust from a Technology perspective**

This stream of research deals with trust issues such as encryption, verification and authentication of vendors and consumers. Studies cover the application of technologies such as third party validation certificates, fulfilment methods, order tracking and handling of consumer data. There are a number of avenues within this stream that focus on the techniques to make the technologies adopted "more visible" to the consumer in order to foster trust.

Many studies have attempted to test the consumer's perception of technology usage and its level of importance in creating an environment of trust in B2C e-commerce.

### **2.4 B2C Trust from a Design perspective**

This stream of research broadly deals with the influence of design issues such as aesthetics, metaphor and usability on trust in B2C contexts. Many design issues such as ease of use, tailoring, amateurism, perceived business size and reputation, and enjoyment have been raised over time especially within the area of Human Computer Interaction (HCI).

Design issues however, extend beyond HCI and cover research efforts aimed at simulating real world experiences and processes online in order to

foster a familiar and trustworthy environment for the consumer. This includes the use of well-known metaphors such “shopping carts” and design of the website to simulate a physical “bricks and mortar” store layout.

Research efforts in this stream deal with design guidelines that seek to engender consumer trust of websites. Design issues such as the incorporation of company logos, privacy statements, style and their impact on trust, and perceived reputation all fit into this vein of research.

## **2.5 B2C Trust from a Sociological/Psychological Perspective**

This stream of research encompasses studies that examine issues that are external to the e-commerce artefact but intrinsic to the individual's socio-psychographic makeup. Such studies relate to the individual's propensity to trust. The latter is based on preconceived beliefs, attitudes and intentions towards e-commerce in general, technology in general and ultimately how these should be considered in terms of web site design, marketing, advertising etc.

It is claimed by some studies that fears and concerns can be allayed by carefully crafted B2C implementations and the use of effectors of trust such as testimonials, transitional reputation, trusting beliefs, propensity to trust, perceived usefulness and usage of brand name.

This stream of research seeks to establish correlations between these effectors and the behaviour of study subjects, site usage statistics and ultimately purchasing behaviour.

## **3. REVIEW OF PERTINENT B2C TRUST MODELS FROM LITERATURE**

We now classify and summarise the various themes addressed by the B2C models in the studies in our review within each of the perspectives as outlined above. The classification reported here enables the analysis following later in this section. Where elements of some studies could reside in more than one category we have classified them as such. In addition, for each model that we included in our final review, we have assessed the nature of the trust relationship being model (e.g. from the vendor's or consumer's viewpoint) and we also assessed whether the model was empirically tested (and if so, how this was achieved). A summary of the findings appears in Table 1.

### 3.1 Technological perspectives

In the relatively new B2C e-commerce environment the ground rules for security have yet to be set and understood by both the consumer and the vendor. The use of credit cards, the most popular mode of transacting in B2C e-commerce is seen as a potential means to fraudulent behaviour. A lack of understanding as to how secure an encrypted transaction, or how to know if the latest encryption techniques are being used leads to a perception of substantial risk (Salam et al., 1998). Personal information being passed to an entity into a world of technology that is not necessarily understood by the consumer can cause concern to the consumer (D Harrison McKnight et al., 2000).

The availability of technologies, such as encryption, reduces the ability to tamper with data during transmission. There are regulations, laws and privacy policies to protect the consumer and the vendor and assist the consumer in assessing the level of risk that is to be taken. Although a B2C site may include all of the technology available to secure the site, it is not certain that the consumer understands the relevant technology symbols used or if the symbols make a difference to the consumer's intention to purchase (Farrell et al., 2001).

A variety of technology mechanisms that may engender trust has been researched. Grazioli (2000) presents the *Model of Internet Consumer Behaviour* that represents trust mechanisms such as testimonials, company size, reputation and assurance mechanisms such as seals warranties, news clips and physical location. Grazioli (2000) considers the *assurance mechanisms*, their relationship to trust and the *trust mechanisms* and their relationship to trust, leading to the shopper's attitude towards purchase. These technological issues are empirically tested on the Internet students, who were given the challenge of perceiving fraud within the site. This research found that deception by the vendor had only a moderate effect on the subjects' opinion of risk and trust.

Tan & Theon (2000-2001) relate *control trust* to *party trust* and propose an equation that models the behaviour of trust in e-commerce. Control trust relates to the control mechanisms that are in place for the transaction to take place, i.e. the technology that is available. "If you understand a control mechanism then you can evaluate your trust in it" (Tan & Thoen, 2000-2001). Party trust refers to the trust in the party with whom you are doing business; this can be applied from either the vendor's or consumer's position. This trust is developed through knowledge of the other party and an understanding of the knowledge that the other party possesses. The *Generic Trust Model* takes the perspective of the vendor in regards to the control mechanisms required to obtain trust for the vendor and from the

consumer. The model depicts risk, risk attitude and potential gain as internal to the person's attitude towards trust in an e-commerce environment. Externally the model suggests trust in the other party and trust in the control mechanisms affect the level of trust. Tan & Theon consider that once we understand who we are dealing with and the mechanisms for transaction we can evaluate our trust in the transaction.

The importance to industry of fostering a trustworthy relationship can be seen by the extent to which the business community have engaged in research to identify effectors of trust. In an industrial study six formal characteristics of web sites are identified that claim to communicate trustworthiness from the consumer's perspective (Cheskin Studio Archetype/Sapient, 1999). The empirical testing is done from the consumer's perspective. The characteristics are brand navigation fulfilment, presentation, up-to-date technology and logos of security-guaranteeing firms (Cheskin Studio Archetype/Sapient, 1999). The study also presents a level of trust that is required as a base before a transaction can take place ranging from mistrust to an intrinsic level of trust.

### **3.2 Design perspectives**

From the included research literature, methods pertaining to web site design were identified that are considered to improve the confidence of the consumer. The Theory of Reasoned Action (Fishbein & I, 1975) leads to the consequence that the buyer's belief about a site affects the buyers' attitude toward the site (Grazioli & Jarvenpaa, 2000). Careful design of an Internet site is maintained to portray a look and feel that will engender substantial size and professionalism of the company while emanating traditional aspects relating to consumer confidence and trust. The literature suggests that in doing so the web site designers are able to reduce the perceived risk potentially experienced by the consumer. It is recognised by the researchers that it is not essential for a vendor to outlay a substantial financial commitment in order to trade on the Internet, hence the possibility of a "fly by night" business exists (Einwiller et al., 2000). Therefore it is considered that trading with an unknown business demands a higher level of trust on the behalf of the consumer than a face-to-face purchase (Choi, 1998). For Internet start-up companies it is therefore suggested that they should present themselves as being professional and able to fulfil any transactions that are established.

From the literature relating to design perspectives, it is proposed that careful design can be incorporated to create a site that presents the look and feel of a pervasive, professional organization that follows traditional trustworthy practices. It is also argued that amateurism and difficulty to

navigate through a site or transaction may question the professionalism of a business, leading to a diminished trust. Another aspect of design said to create a trusting environment is one that recognizes the consumer by tailoring to their individual requirements, giving importance to the consumer as an individual. These issues have been recognized and included in models that lead to e-commerce B2C trust and consequently perceived reduction of risk.

The *Internet Consumer Trust Model* of Jarvenpaa et al (1999) depicts consumer trust as a result in the consumer's view of the perceived size of the store and reputation. The resultant trust in the store is then reflective of the attitude and risk perception of the consumer. Perceived reputation and size of the business as effectors of trust are considered to offer a significant contribution. Jarvenpaa et al. (1999) consider the positive effects that perceived reputation and size have towards trust in a store that leads to eventual purchasing intention.

The TAM model (Technology Acceptance Model) (Fishbein & I, 1975; Davis, 1989) has been adapted and extended to identify its relevance to B2C e-commerce. The *Proposed Conceptual Model*, an extension of the TAM, includes perceptions of privacy and security (Pavlou, 2001) that attributes TAM with social aspects. A survey of students found that the factors of privacy and security perceptions affect trust and therefore perceived risk. The survey of 52 students is said to substantiate the initial premise of the TAM model, indicating a correlation between perceived usefulness and perceived ease of use on intention to transact.

Design is also discussed within the literature from a Human Computer Interaction perspective. Such issues as the look and feel of a web site to project an image of establishment and security are foremost in the discussion. Fogg et al. (2001) set out to discover what gives a web site the perception of credibility. Fogg's study is a large-scale on-line survey that considers the consumers' perspective of the factors that are said to portray a strong sense of credibility. Seven web site design factors and their effects on credibility were tested; "real world feel", ease of use, expertise, trustworthiness, tailoring, commercial implications and amateurism. It was found that amateurism was the greatest deterrent of web trust while a real world feel gained the greatest acceptance. From the study, Fogg et al (2001) have proposed guidelines in order to assist web site design to engender trust in a B2C e-commerce environment.

McKnight et al. (2000) use terminology from the HCI discipline in relationship to e-commerce design, such as the effects of icons from "trusted" third parties. The paper discusses the movement of the consumer from the exploratory stage to the commitment stage and how the consumer's commitment is effected by the inclusion of third party recognition on the

site. The authors indicate that the model is to be empirically tested by using students and an online survey.

Egger's (2000) *Model of Trust for E-Commerce* (MoTEC) considers the usability, overview and appeal from the design perspective of an e-commerce site. Egger (2000) proposes that traditional HCI analysis and design methods are relevant in addressing design issues in B2C e-commerce incorporating 'User Centred Design' methodologies. Egger's model includes interface properties of appeal, overview, usability and informational content of products and services, company, security, privacy and communication. Egger (2000) does not consider these to be the only effectors of trust but recognises that reputation, attitude to technology and propensity to trust need to be considered.

In a second study McKnight et al. (D. H. McKnight & Chervany, 2001) identify linkages between trusting beliefs to trust related Internet behaviour in the *Interdisciplinary Trust Constructs Model*. Trusting beliefs are said to be a product of web vendor interventions including design issues such as privacy policies and third party seals and customer interaction. McKnight discusses vendor interventions (certification, etc.) as having strong direct links to *trust* but recognizes that *trusting beliefs* and *trusting intentions* have a large effect on trust in e-commerce.

### 3.3 Sociological/Psychological perspectives

Within the selected literature individuals are recognized as bringing to the e-commerce B2C environment preconceived ideas regarding technology, electronic commerce, purchasing behaviour and a propensity to trust (Jarvenpaa et al., 1999; D. H. McKnight & Chervany, 2001). Individuals are also purported to be influenced by external factors such as experiences of others, media exposure, advertising and use of brand name (Einwiller et al., 2000). The factors considered to have an influence on consumer trust have been acknowledged as possibly having either a positive or negative impact depending on the knowledge and experience of the individual. Much research attention is dedicated to determining how much impact, if any, each of these factors have on e-commerce. Methods and models relating to the neutralising of any negative effectors of trust relating to individual beliefs and environmental issues have been proposed and tested. In an attempt to alleviate concerns felt by the individuals, vendor's sites are tested with contrary factors that appear external to the vendor such as testimonials of satisfied customers and transitional reputation that often relies on the 'good name' of a known product. It is anticipated by the researchers that by reducing the negative preconceived views of e-commerce and improving the

environmental issues, purchasing behaviour can be modified to include e-commerce as a trustworthy environment in which to conduct business.

The theme of propensity to trust is modelled by Ambrose (1998), *A Trust Based Buying Behaviour Model*, and includes seller and buyer characteristics as part of the model. This was developed from Mayer et al (1995) and proposes that the vendor can improve the trustworthiness from the consumer's view of the site by managing its appearance of ability, benevolence and integrity. It is also proposed within this model that the consumer must have a need, capacity and willingness to purchase as trust is not the only criterion for purchasing behaviour. This model has not been empirically tested.

Effectors on trust such as propensity to trust, word of mouth and institutional characteristics are depicted in the *Research Model* by K. Kim & Prabhakar (2000). Kim's research considers the factors influencing trust, in particular initial trust, categorising the factors into economics based, institution based and personality based. Propensity to trust, word of mouth referrals and institutional characteristics are said to influence initial trust and when considered with the perceived risk and trust in the institution will lead to trusting behaviour by the consumer. The model has been pre-tested by students in an online survey and is to be tested further in regards to the banking industry utilizing an online survey.

Cheung & Lee (2001) have developed a 30 item list of sociological and psychological effectors that affect trust in e-commerce as a measurement instrument reliability and validity of an e-commerce transaction. The list of 30 items covers consumers view of security, privacy, integrity of vendor, competence of vendor, propensity to trust, cultural background positive experience with the Internet, third party recognition, legal aspects, trust and perceived risk. It does not cover HCI design aspects. This instrument was initially empirically tested by a student survey and subsequently tested indicating cultural differences in trust of e-commerce (Borchers, 2001).

Kini & Choobineh (2001) conducted empirical testing on the issues relating to propensity to trust and developed an instrument named the *trust scale* leading to a *Research Model for Studying Trust in WWW Commerce*. This model, which was tested on students by means of a questionnaire, includes tendency to trust, risk involved, and information provision as influencing factors for trust in banking e-commerce. The findings from the consumer's perspective show that tendency to trust was not a significant influence on trust in the banking environment, which is contrary to many other studies, in particular those who have revised the TAM model. Their research also found that trust is related to the task that is being undertaken and suggests that therefore not all tasks may be suitable for Internet commerce.

Considerations other than personality based trust characteristics are identified by Kim, E. (2001) who adds to personality based trust with environment based trust and process-based trust. The Model of Sustainable Trust discusses four possible factors that affect trust that are ability, willingness, familiarity and affection. Kim, E. (2001) suggests that personal tendency may be too contingent to be managed, whereas environment and processes are factors that are under the control of the vendor and legal system. Kim, E. (2001) suggests factors that may affect sustainable trust rather than initial trust as ability, willingness, familiarity and affection. This model has not been empirically tested.

More intently focused on the environment as a factor affecting trust in e-commerce, Salam (1998) suggest in the proposed model, *A Priori Theoretical Model*, that institutional trust and economic incentive are the main reasons for trust and purchasing in an e-commerce environment. The paper claims that these two social factors lead to consumer perceived risk and are in fact inversely proportional to consumer perceived risk. This model was tested using an online survey of web users. Einwiller et al. (2000) propose that recognition of a trusted symbol or transference of trust can give trust to a vendor's site. This research discusses the concept of corporate branding as a method of engaging trust in e-commerce distinguishing branding processes by targets, content and methods. Einwiller et al. (2000) have collated a table of methods said to improve the level of trust by including in the contact with the consumer either personal or imparted experience by phone or chat rooms, increasing familiarity through brand naming, creating affiliations with membership, being transparent in all matters of security and privacy. These methods include assuring that the web site meets the demands of the consumer, press coverage, financial coverage such as turning customers into shareholders and corporate advertising and design. These influencing factors have not yet been empirically confirmed.

Extending from these individual sociological, psychological Papadopoulou et al. (2001) collate research in e-commerce trust and theoretical models for the formation of trust in customer-business relationships. The authors present a model of *Trust Formation Through Promise Fulfillment Within E-Serviscape* that considers the building and retention of trust from the consumer perspective throughout the e-commerce process. The underlying aspects of trust creation considered include trusting intention, behaviour and beliefs. The model is based on the argument that trust is built through repeated interactions that include fulfilment of promises, and is yet to be empirically tested.

Table 1 provides an overview of the pertinent research that we have reviewed as outlined above. We refer to the perspectives adopted by the researchers in developing their models and the research testing procedures

and collated the data accordingly. Table 1 also displays the direction from which the trust is considered, i.e. trust by the consumer of the vendor or trust by the vendor of the consumer.

Reference	Perspective			Empirically tested
	Technological	Design	Sociological/ Psychological	
Ambrose & Johnson, 1998			Consumer	No
Cheung & Lee, 2001	Consumer		Consumer	Yes (students)
Kini & Choobineh, 2001			Consumer	Yes (students)
Egger, 2000		Vendor	Vendor	No
Einwiller et al., 2000			Consumer	No
Fogg et al., 2001		Consumer		Yes (online)
Grazioli & Jarvenpaa, 2000	Consumer	Consumer		Yes (online students)
Jarvenpaa et al., 1999		Consumer		Yes (students)
K. Kim & Prabhakar, 2000			Consumer	Yes (students pretest only)
E. Kim, 2001			Consumer	No
D Harrison McKnight et al., 2000		Consumer		No
D. H. McKnight & Chervany, 2001		Consumer	Consumer	No
Papadopoulou et al., 2001			Consumer	No
Pavlou, 2001	Consumer		Consumer	Yes (students)
Salam et al., 1998			Consumer	Yes (not directly)
Tan & Thoen, 2000-2001	Vendor	Vendor		No

Table 1: Comparisons of trust models from current literature indicating major perspectives, consumer/vendor trust direction and empirical testing status

## 4. DISCUSSION

It could be argued that the diverse and fragmented nature of the studies we reviewed is typical of an emerging field of research. Indeed, pluralistic research approaches are generally considered to be conducive towards establishing a broader understanding of emergent phenomena (Nissen et al., 1991). However, there is also now a need for more integrative research efforts that are cognisant of the current body of knowledge. In addressing this need it is necessary to revisit existing assumptions, points of departure and to critically reflect on the progress to date. In these respects we raise four main concerns that warrant further research attention. We base the discussion on the analysis of the research studies as outlined above and some findings from our own empirical field studies.

## **4.1 An oversimplification of the trust concept**

A key criticism of much of the current literature concerns the conflation of the trust concept. Many of the current studies view trust (and especially consumer trust) as a singular notion: the consumer trusts the vendor. Such a simplistic view is not only inconsistent with our own empirical findings, but may also become a conceptual liability in addressing specific consumer concerns. We argue for an "unbundling" of the trust concept. For example, a distinction could be made between trust in the integrity and trust in the ability of a vendor. A consumer may trust a vendor to be honest and to make every effort possible to deliver on the products as requested (integrity), however the consumer may not trust the same vendor's ability to ensure the safety of their transaction over the Internet (a point supported by Tan & Thoen, 2000-2001). An unbundling of the trust concept can isolate different facets of trust with much richer insights in terms of addressing specific consumer trust concerns. In addition we advocate the need to acknowledge the richness and multiplicity of the trust concept.

## **4.2 Uni-directional view of trust**

As mentioned earlier, in a B2C context consumers are typically required to pay for the transaction up front in the expectation that the goods or services will be received as promised. In addition, consumers often need to furnish additional (and possibly sensitive) personal details (e.g. home addresses) that could be misused. It comes as no surprise that in the trust models reviewed these facets are well accounted for.

From Table 1 we can however see that very few of the studies acknowledge other stakeholders' perspectives on trust. In our own empirical fieldwork, it is clear that the vendor also expects a level of integrity in fulfilling an order that has been placed (Scheepers, 2001). The recently reported high levels of credit card fraud, in particular the Asia Pacific Region, contributes to this vendor expectation. The perpetrators of fraudulent transactions use stolen credit card numbers and try to obtain goods from trusting vendors (O'Brien, 2001). Since the stolen credit card details are valid, basic credit card authorisation processes fail to register the fraudulent use.

In addition financial institutions (e.g. credit card companies) and governments for example, also have a vested interest in B2C transactions being conducted in an environment of high integrity. Hence we argue that multiple stakeholder perspectives on the trust relationship should be reflected in B2C trust models.

### **4.3 Discipline centred approaches to modelling trust**

The review suggests theoretical and empirical frameworks on which to base an integrative approach to understanding the complexities of human behaviour, design, technology and the business world. As can be seen from Table 1, the presented models reviewed depict trust in an e-commerce environment as coming from mainly singular and at best dual perspectives that the authors have adopted in their study. While each suggested model has equally justified its reasons for concerning itself with its chosen discipline/s, in taking these isolated views they have diminished the relevance of the factors that are found to be intrinsic to e-commerce trust by other modellers. In moving towards an understanding in e-commerce we need to understand the consumer, the vendor, the technology and the surrounding influences that involve all parties and how they all interact with each other. In particular, consideration needs to be given to the overlap of each of the three disciplines that can give a clearer picture of the trust effectors and their relationships. Clear guidelines are needed for the business community that will create an environment where both the consumer and vendor feel secure in all stages of transactions in B2C Internet e-commerce. We therefore argue for more collaborative research efforts across disciplines to address the fragmented body of knowledge.

### **4.4 Lack of empirical grounding and testing**

Other issues of concern with most of the current documented models on B2C trust are the lack of empirical grounding and the lack of rigorous testing. As can be seen from the models in Table 1, few of the models have been subjected to empirical testing. In those cases where the models have indeed been tested, the test subjects are often students. We argue that this does not constitute a sufficiently rigorous test base. Hence we suggest there is a need for research approaches aimed at testing current models. We also suggest future research in this area should clearly indicate how proposed models should be tested.

## **5. CONCLUSION**

In this review we have drawn on recent studies from prominent peer reviewed journals and conference proceedings on B2C trust models in an Internet e-commerce environment. From this literature we classified the various models into three main focal areas: technological, design and

sociological /psychological perspectives with minimal overlap of perspectives. We found that each of the researchers had considered the question of trust from the direction of either the vendor or the consumer, limiting the outlook and consequently the requirements of trust creation on an Internet e-commerce site. It was also evident from the literature that although there were many differing definitions of trust there appeared to be an oversimplification of trust concepts. To realise a model for trust requires the unbundling of the trust in the vendor and trust in the vendor's ability to fulfil a transaction. Within the literature reviewed it appeared that the grounding for the models and the empirical testing was not rigorous in all cases with the use of students and online surveys. This method of testing did not address the full extent of the transaction, e.g. the financial obligation that is intrinsically part of Internet commerce.

The reviewed models have suggested theoretical and empirical frameworks on which to base an integrative approach to understanding the complexities of human behaviour, design, technology and the business world. It can now been seen that the question of trust within the e-commerce discipline is diverse, possibly beyond that of the individual researcher, raising the need for more collaborative research efforts across disciplines to address the fragmented research. We also advocate that multiple stakeholder perspectives on the trust relationship should be considered and reflected in B2C trust models. Furthermore the concept of trust needs to be unbundled from its simplistic roots in order to isolate different facets of trust, allowing a greater understanding of the trust concerns and recognizing the multiplicity of the trust concept. Finally we suggest there is a need for rigorous research approaches aimed at testing current models and that future research in this area should clearly indicate how proposed models are to be tested.

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