

The Importance of Inter-Organizational-Trust in Business to Business E-Commerce Participation – Case Studies in New Zealand

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Abstract

The study seeks to understand inter-organizational-trust as an antecedent factor in the adoption and participation in business to business e-commerce. Exploratory research together with a literature review paved the way to the development of a conceptual model. The model was tested via four case studies consisting of a large public sector organization and three Small-Medium Enterprises (SMEs) involved in customs clearance. SMEs included an Internet service provider, a customs broker (agent) and an importer. Data was collected via in depth interviews, discussions with key personnel, and from existing documents. The findings strongly indicate that inter-organizational-trust is important for e-commerce participation, as organizations need to cooperate, collaborate, and communicate timely and relevant information, in order to facilitate e-commerce. This entails not only technological proficiencies, but also trust between trading parties, so that business transactions are sent and received in an orderly fashion.

Keywords

A10402, BD0105, EI0221, HA0702

INTRODUCTION

The objective of this study is to examine the importance of inter-organizational-trust in the adoption and participation in business-to-business e-commerce. E-Commerce participation refers to the extent an organization has adopted and integrated e-commerce. Sydow (1998) defines Inter-Organizational-Trust (IOT) as ‘the confidence of an organization in the reliability of other organizations regarding a given set of outcomes or events’ (p35). We adopt this definition, and define inter-organizational-trust as ‘the confidence in the reliability of two organizations in a possibly risky situation that all trading partners involved in the action will act competently and dutifully’.

The adoption of Internet-based commerce requires a certain level of trust, both in the technology being used to transact business, and in the parties with whom trade is being conducted. The evolution of Internet provides the ability to conveniently and flexibly share information across organizations, thus radically transforming organizational procedures. Consequently, Internet-based business-to-business e-commerce applications can potentially lead to profound changes in inter-organizational-relationships. Moreover, by reaching trading partners through the Internet, organizations are able to implement more effective targeted marketing and relationship building strategies with lower overheads. For example, extranet e-commerce applications provide the ability to track real time information with lower costs and flexibility (Riggins & Rhee, 1998). Thus, there is a two way or cyclic relationship between participation in Internet-based e-commerce and trust – trust as an antecedent of participation – and participation in e-commerce can in turn modify trust. However, in this study we will investigate only the forward part of the cyclic relationship, that is the role of trust in participation in e-commerce.

There seems to be a perception by businesses that e-commerce transactions may be both insecure and unreliable. Despite the assurances of security and reliability in technological mechanisms, such as encryption mechanisms, authorization mechanisms, digital signatures, and certification authorities, trading partners in business-to-business e-commerce do not seem to trust the '*people side*' of the transactions (Marcella et al., 1998). Lack of trust in e-commerce activities led to uncertainties in the e-commerce environment. These uncertainties in turn create a perception of increased risk, thereby inhibiting the tendency to participate in e-commerce. Uncertainties reduce the confidence both in the reliability of business-to-business transactions transmitted electronically and, more importantly in the trading parties themselves. Parkhe, (1998) identifies two types of uncertainties, uncertainty regarding unknown future events and uncertainty regarding trading partners' responses to future events. It is in this environment of dual uncertainty that trust becomes important in business-to-business e-commerce participation.

It is only recently that IS literature has recognized the complementary, and at the same time competing roles of technology and trust in inter-organizational business relationships. For example, while some scholars (Malone et al., 1987; Clemons et al., 1993), have focused primarily on information technology as a means of reducing inter-organizational transaction costs, Kumar et al (1998)'s findings suggest the substitutability of trust and technology in reducing transaction costs in inter-organizational-systems (IOSs). Thus, it is important that we understand the relative roles of technology and trust in e-commerce participation.

The paper proceeds in the following way. The next section provides the theoretical foundations leading to the development of a conceptual model. Then we describe the research process, which includes a case study design, data collection and analysis procedure. Finally, we discuss the key findings, and conclude the paper by highlighting its contributions.

DEVELOPMENT OF THE CONCEPTUAL MODEL

The conceptual model developed for this study was derived from theories in a multi-disciplinary literature that include the marketing, management, sociology, information systems and e-commerce literature. Five theoretical perspectives contributed to the constructs in the conceptual model. A brief description of trust in business relationships, inter-organizational-relationships theory (IORs), transaction-cost-economics theory (TCEs), resource-dependency theory and trust and security based mechanisms in e-commerce is given below.

Trust in Trading Partners

Previous research provides evidence that trust is important for successful long term trading partner relationships. For example, trust has been found to increase cooperation, thus, leading to communication openness and information sharing (Doney & Cannon, 1997; Ring & Van de Ven, 1994; Smith & Barclay, 1997).

Three types of trading partner trust have been identified from previous research. They include, competence trust, predictability trust and goodwill trust. Competence trust emphasizes reliance on trading partners' skills, technical knowledge, and ability to operate business-to-business e-commerce applications correctly. Previous research suggests that large powerful buyers in the automotive industry sign contractual service level agreements with their smaller suppliers in order to monitor their performance. Performance assessment includes, quality of goods, services, timely delivery, and accuracy of data received (Helper, 1991; Webster, 1995).

Predictability trust emphasizes belief in trading partners' consistent behaviors' that provide sufficient knowledge for other trading partners' to make predictions and judgements due to prior experiences. Thus, a chain of positive consistent behaviors make trading partners' reliable, predictable, and therefore trustworthy.

Goodwill trust emphasizes the reliance upon trading partners' care, concern, honesty and benevolence that allow trading partners to further invest in their trading partner relationships. Goodwill trust is characterized by an increased level of cooperation, open communication, commitment, sharing of knowledge and information, thus leading to increased e-commerce participation. These three types of trust, competence, predictability, and goodwill trust form the underlying taxonomy of inter-organizational or trading partner trust used in our research.

Inter-Organizational-Relationships Theory

Inter-organizational-relationships arise from inter-organizational-systems (IOSs), and occur when two or more organizations exchange resources (e.g., money, physical facilities and materials, information, customer or client referrals, technical staff services) between each other (Bensao & Venkatraman, 1996; Clemons et al., 1993; Malone, 1987). Inter-organizational-relationships (IORs) are concerned with reasons and conditions for forming relationships and provide insights into interactions', environmental and contingent factors thus capitalizing on the formation and structure of cooperative IORs (Ring & Van de Ven, 1994). Furthermore, structural factors include governance mechanisms and institutional arrangements that prescribe an overall pattern of interactions in inter-organizational-relationships. Governance mechanisms such as, procedures, policies, standards, and trading partner agreements enable structured routines thereby capitalizing on complete and correct e-commerce operations that yield benefits from savings in time, and cost. Hence, by properly managing these situational and structural factors in e-commerce, outcomes from inter-organizational-relationships may be monitored to achieve high standards and quality.

Transaction-Cost-Economics Theory (TCEs)

Transaction-cost-economics (TCEs) focuses on economic efficiencies that provide insights into economic exchanges. They deal with optimum governance mechanisms (markets or hierarchies) thus, minimizing production and transaction costs (Williamson, 1975). Trading partners usually

negotiate and monitor trading partner agreements as legal contracts before engaging in e-commerce, in order to protect themselves against opportunistic behaviors. Hence, transaction-cost-economics contribute to perceived benefits, and perceived risks of e-commerce.

Resource-Dependency Theory

Resource-dependency theory provides a holistic approach with explicit recognition of economic and socio-political dimensions of trading partner relationships (Pfeffer & Salanick, 1978). Specifically resource-dependency theory is concerned with external forces in an e-commerce environment within which the dyad operates thus contributing to perceived risks via computer viruses, and open standards. Moreover, internal organizational dimensions that structure and shape written policies, and procedures contribute to perceived benefits, and trading partner interactions (as in behavioral dimensions) in their daily e-commerce exchanges.

Trust and Security based Mechanisms

Trust and security based mechanisms in e-commerce are implementation, operational and network controls that aim to provide assurances and guarantees in the form of security safeguards and protection services. They include digital signatures, encryption mechanisms (via public key infrastructure), authorization mechanisms (via User IDs and passwords), and best business practices (via regular audits, top management commitment, standards and contingency procedures). These mechanisms provide technological, organizational, and relationship benefits', in the form of timely, accurate, complete transmission, and receipt of transactions, thus achieving transaction integrity, authentication, confidentiality, non-repudiation, and availability (Bhimani, 1996; Jamieson, 1996; Parker, 1995; Marcella et al., 1998). By properly managing these mechanisms organizations can perceive benefits of e-commerce. Alternatively, with poor business practices such as; incomplete, incompatible, insecure systems, together with inadequate backups, and inadequate training, risks of e-commerce may escalate.

A Conceptual Model for Examining the Role of Trust in Participation in E-Commerce

The conceptual model (see figure 1) below aims to examine the impact of trading partner trust in e-commerce participation.

Conceptual Model of Trading Partner Trust in E-Commerce Participation

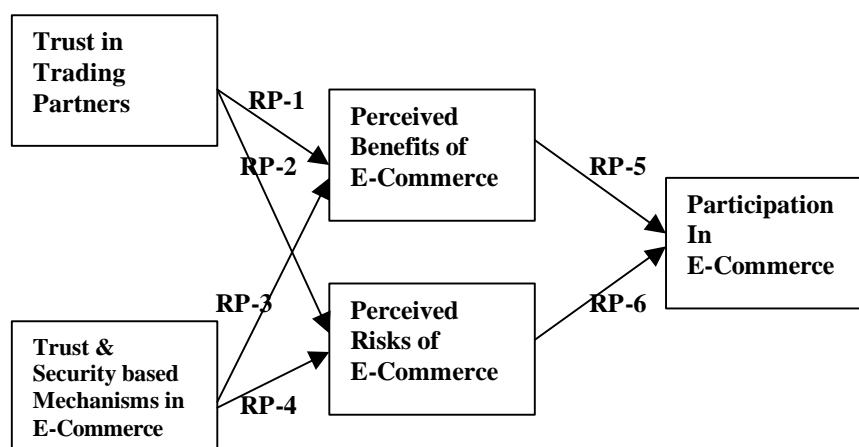


Figure 1: Conceptual Model of Trading Partner Trust in E-Commerce Participation

The conceptual model above was developed from theories in a multi-disciplinary literature. They include, trust in business relationships, inter-organizational-relationships that help identify situational, structural, formalization and procedural factors thus contributing to perceived benefits, uncertainties/risks, and governance mechanisms in e-commerce. Similarly, transaction-cost-economics theory focused on perceived benefits, (as in economic advantages), and perceived risks, (as in opportunistic behaviors, task complexities and uncertainties). Resource dependency theory contributed to perceived risks of e-commerce, and finally, trust and security based mechanisms, contributed to perceived benefits of e-commerce. Hence, perceived benefits and perceived risks help determine the extent of e-commerce participation in the form of e-commerce performance and trading partner trust relationship development. The aim of the conceptual model is to provide a comprehensive and complete approach in understanding the importance of inter-organizational-trust in e-commerce participation. Research propositions are derived from the conceptual model and are shown as arrows connecting the constructs.

- Research Proposition 1 - Trading partner trust is positively associated with perceived benefits of e-commerce
- Research Proposition 2 - Trading partner trust is negatively associated with perceived risks of e-commerce
- Research Proposition 3 - Trust and security based mechanisms in e-commerce are positively associated with perceived benefits of e-commerce
- Research Proposition 4 - Trust and security based mechanisms in e-commerce are negatively associated with perceived risks of e-commerce
- Research Proposition 5 - Perceived benefits of e-commerce are positively associated with e-commerce participation
- Research Proposition 6 - Perceived risks of e-commerce are negatively associated with e-commerce participation

Table 1 below outlines the constructs, sub-concepts (dimensions), definitions, and source applied in the conceptual model.

Constructs	Sub-concepts Dimensions	Definitions	Source
Trust in Trading Partners		antecedent trust behaviors that determine competence, predictability and goodwill types of trust in trading partners	Doney & Cannon, (1997); Ring & Van de Ven, (1994); Smith & Barclay, (1997); Mayer et al (1995).
	Competence Trust Economic Foundation	reliance upon the ability, skills, knowledge and competence of trading partners to perform business to business e-commerce correctly and completely	Lewicki & Bunker (1996)
	Predictability Trust Familiarity Foundation	reliance upon the consistent behaviors of trading partners that allow another trading partner to make predictions and judgements due to past experiences	Lewicki & Bunker (1996)
	Goodwill	reliance upon the care, concern,	Sako (1998)

	Trust Empathic Foundation	honesty, and benevolence shown by trading partners that allow the other trading partner to further invest in their trading partner relationship	
Trust and Security based mechanisms in E- Commerce		trust and security based mechanisms in e-commerce are trust assurances, security safeguards and protection services provided by e-commerce technology, organizations, human and third party services.	Jamieson, (1996) Marcella et al., (1998); Parker (1995)
	Confidentiality	protection of e-commerce transactions and message content against unauthorized reading, copying, or disclosure via encryption mechanisms	Bhimani, (1996); Jamieson, (1996)
	Integrity	transaction accuracy and assurance that e-commerce transactions have not been altered or deleted via acknowledgment procedures applying digital signatures	Bhimani, (1996); Jamieson, (1996)
	Authentication	trading partner's transaction quality of being authoritative, valid, true, genuine, worthy of acceptance or belief by reason of conformity to the fact that reality is present via digital signatures, User IDs, and passwords	Bhimani, (1996); Jamieson, (1996)
	Non-repudiation	originator of e-commerce transactions cannot deny receiving or sending that transaction via acknowledgement procedures applying digital signatures	Bhimani, (1996); Jamieson, (1996)
	Access Controls	protection of e-commerce transactions against weaknesses in the transmission media and protection of the sender against internal fraud or manipulation via authorization mechanisms such as User IDs and passwords	Bhimani, (1996); Jamieson, (1996)
	Availability	assurance that passes or conveys e-commerce transactions without interruption by providing authorized users with e-commerce systems via authorization mechanisms	Bhimani, (1996); Jamieson, (1996)
	Best Business Practices	policies, procedures and standards that ensure smooth functioning of e-commerce via written policies, procedures and top management commitment	Jamieson, (1996); Marcella et al., (1998)
Perceived Benefits of E- Commerce		perceived benefits of e-commerce are gains received by organizations that have adopted e-commerce	Scala & McGarth, (1994); Saunders & Clark, (1992); Premkumar et al., (1994)
	Direct perceived benefits of e-commerce	benefits derived from direct savings in costs and time	Scala & McGarth (1994), Saunders & Clark (1992)

	<i>(Economic)</i>		
	<i>Indirect perceived benefits of e-commerce (Personal)</i>	benefits derived from accuracy and quality of the messages thus leading to competitive advantage	Scala & McGarth (1994), Saunders & Clark (1992)
	<i>Relationship related perceived benefits of e-commerce (Personal)</i>	benefits derived from open communications, information sharing, cooperation, and commitment	Ganesan, (1994); Gulati, (1995); Ring & Van de Ven, (1994); Smith & Barclay, (1997).
	<i>Strategic perceived benefits of e-commerce (Symbolic)</i>	benefits derived from closer ties between trading partners, improved reputation, thus leading to business continuity	Scala & McGarth (1994), Saunders & Clark (1992)
Perceived Risks of E- Commerce		perceived risks of e-commerce is the potential weakness, barriers and losses faced by organizations that have adopted e-commerce	Bhimani, (1996); Jamieson, (1996)
	<i>Technology related perceived risks of e-commerce</i>	risks derived from misuse of e-commerce technology, such as, unauthorized access, integrity, viruses, confidentiality, availability	Bhimani, (1996); Jamieson, (1996)
	<i>People-related perceived risks of e-commerce</i>	risks derived from trading partner's lack of knowledge and training in e-commerce such as, uncertainties, imbalance of power, mistrust, opportunistic behaviors	Parkhe (1998); Ring & Van de Ven, 1994); Williamson, (1975)
	<i>General perceived risks of e-commerce</i>	risks derived from poor business practices, environmental risks, standards and audit policies	Marcella et al., (1998)
Participation in E- Commerce		participation in e-commerce is the degree to which organizations are willing to engage in business to business e-commerce	Doney & Cannon, 1997; Morgan & Hunt, 1994; Smith & Barclay, 1997
	<i>E-Commerce Performance</i>	is the volume, dollar value, and types of business transactions exchanged between trading partners	Smith & Barclay (1997); Hart & Saunders (1997)
	<i>Trading Partner relationship development</i>	is the extent of trading partner satisfaction	Morgan & Hunt (1994)

Table 1: Summary of constructs, sub-concepts (dimensions), definitions and source

RESEARCH METHOD

Studying inter-organizational-trust in business-to-business e-commerce participation phenomenon requires the context of real organizations using e-commerce systems or operating in an e-commerce environment (Yin, 1994). A case study approach was seen appropriate, particularly in an area where few previous studies have been conducted (Hart & Saunders, 1997; Sako, 1998).

Four case studies were initially carried out in order to investigate and examine trading partner trust in e-commerce participation. The four case studies were then followed by another six case studies. In this paper we discuss the findings of four case studies.

Case Study Design – Data Collection and Analysis

According to Yin (1994), the following components make up a research design.

- A case study's question; 'how' and 'why' types of questions were considered in this study. How and why does inter-organizational-trust influences the perception of e-commerce benefits and risks, thus leading to the extent of its participation?
- The research propositions shown in figure 1, help focus the study. Although, the concept of trading partner trust is new to this study, evidence from the marketing and management literature clearly indicates that high levels of trust in business relationships can lead to low risks and controls (Cummings & Bromiley, 1996; Doney & Cannon, 1997; Gulati, 1995; Ganesan, 1994).
- Unit of analysis. In this study we have identified two unit of analysis. The primary unit of analysis is the participants (that is the e-commerce coordinators, and managers involved in e-commerce participation). The next level of analysis is the inter-organizational-dyad, that is between (NZ Customs and their Internet-Service-Provider (ISP); the ISP and customs broker; and the customs broker and importer, shown as three oval shapes A, B, and C in Fig-2). Furthermore, e-commerce systems, existing documents and standards were examined as unit of analysis within each case.
- The logic of linking the data to the research propositions. Multiple sources of collecting data were applied and they include, interviews, observation of trading partners using e-commerce systems, and documents. Document analysis included, policies, e-commerce implementation reports, trading partner agreements, security procedures, semi-structured interview notes, and telephone interview notes. Multiple data sources permitted cross checking, which in turn led to multiple perspectives on important issues thereby maintaining a chain of evidence.
- The criteria for interpreting the findings. Data analysis was carried out via pattern matching, narrative descriptions and causal explanations. Both qualitative and quantitative sources of data were used during data analysis.

FINDINGS AND DISCUSSION

Background Information of the Cases

The four case studies chosen in this study were located within the Wellington region in New Zealand (NZ). Figure 2, below provides a contextual rich picture of the four organizations. The first case, NZ Customs is a large public sector organization involves the clearance of importing and exporting documents. They use CusMod (Customs Modernization), a complex sophisticated alert system to perform intelligence testing through a message queue series (a priority based software) to transact e-commerce transactions such as, cargo information, shipping documentation, clearance documents, and passenger information (both flight and sea). All incoming transactions had to go through their Internet-service-provider (ISP) before coming into NZ Customs.

The second case (ISP) is New Zealand's leading trusted electronic business intermediary who provides services' to enable business transactions between applications across any network and

organizations. The ISP, acts as a gateway for electronic transactions including, everyday business transactions (e.g. purchase orders, invoices, payment bills, compliance with government agencies) (e.g. Immigration department), and provides value added services, (e.g. payment, and fulfillment functions).

The third case is a customs broker, who provides customs clearance services for both importers and exporters via Trade Manager. Trade Manager (is a software), designed to meet the needs of exporters, and importers. Exporters, use it to prepare export documentation, including invoices, shipper's letters of instruction, picking and packing lists, order acknowledgments, certificates of origin, and customs declaration. Importers use Trade Manager to manage their orders, keep a database of all their shipments, and calculate accurate landed costs. All events are recorded against each job, order on a date/time basis and memos can be created and referenced/filed against each job for future reference, thus enabling importers to achieve lower clearance costs.

The fourth case is an importer who imports kitchen gadgets, plastic, baby wear, cosmetics, and distributes them to the big five supermarkets in New Zealand namely, New Worlds, Woolworth, Warehouse, Big Fresh and Countdown. The importer obtains his goods cleared from NZ Customs through their customs broker.

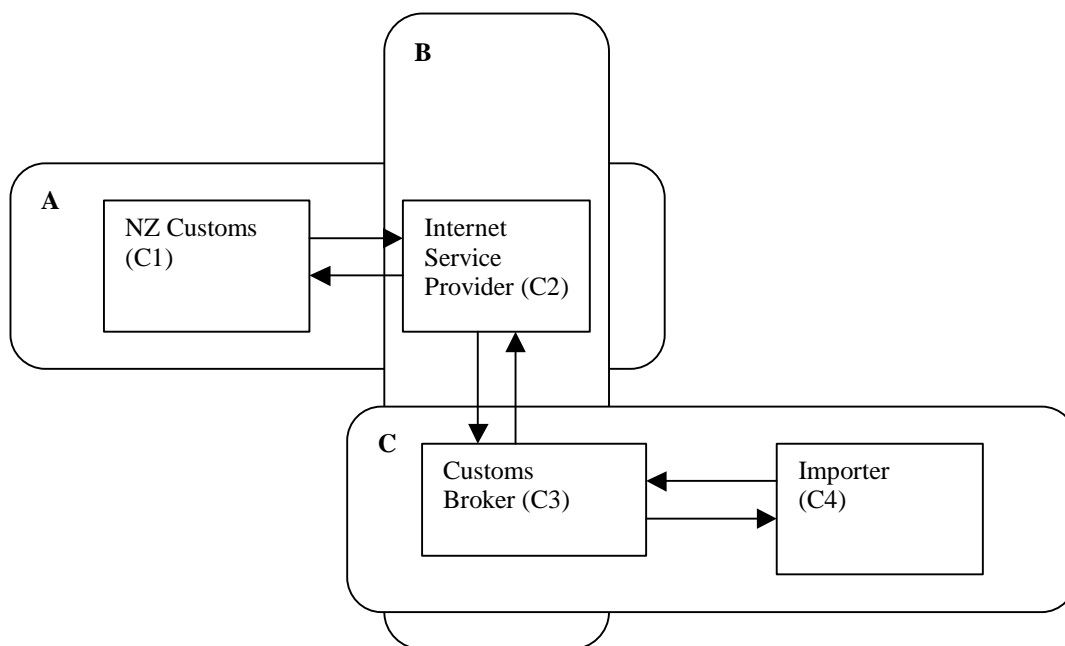


Figure 2: Contextual Rich Picture of the four sites

In figure 2, above the importer provides shipment information to the customs broker who prepares customs clearance documents, in order to clear his goods. The customs broker then transmits the documents to the ISP, who translates them to suit the format required by NZ Customs. NZ Customs follows a routine check, which includes intelligence testing and issues a delivery order to their ISP who translates it back to suit the format of the customs broker. The customs broker, then issues an invoice together with a customs declaration document to the importer who can now collect his goods. Figure 2, also shows three inter-organizational-dyads (shown as three oval shapes A, B, and C), that is, between NZ Customs and their ISP (A), ISP

and customs broker (B), and the customs broker and importer (C). Antecedent trust between the importer and customs broker is high as the customs broker is expected to clear the goods for the importers. Moreover, the customs broker requires complete accurate shipment information from the importer, in order to prepare customs clearance documents. Therefore, the importer is dependent and relies on the ability and skills of the customs broker to clear their goods quickly and promptly (competence trust). The situation between NZ Customs, and their ISP was slightly different. It was expected of the ISP to undertake prompt delivery and receipt of business-to-business e-commerce transactions within a certain time frame as they were outsource to do the job, and some of the goods may be perishables. Table two and three below, provides additional background information about the four case sites.

Case Sites	Organization Type, Size and Number of Employees	Nature of business	Type of business to business e-commerce application
Case Study – 1 (C1)	NZ Customs Public Service Sector Large 700 employees	Intelligence and clearance testing of goods imported and exported	Custom Modernization (CusMod) since 1997 EDI X400, X25, now via the Internet
Case Study – 2 (C2)	Internet Service Provider Private organization SME 14 employees	Service provider for electronic transactions exchanged between Customs NZ and their trading partners (importers & exporters)	Internet EDI X400, X25
Case Study – 3 (C3)	Customs Broker (Agent) Private organization SME 7 employees	Clear goods from customs for importers and exporters	Trade Manager using Microsoft Access and Visual basic applications
Case Study – 4 (C4)	Importer Private organization SME 13 employees	Imports kitchen gadgets, plastic, baby wear and cosmetics	Trade Manager Using Microsoft Access and Visual basic applications

Table 2: Case study characteristics

Case Study Participants	Job Title	Age Range	E-commerce Experience
Case Study 1 (C1)	Intranet administrator	40-50	Mature – 9
Case Study 1 (C1)	Consultant	40-50	Medium – 6
Case Study 1 (C1)	CusMod coordinator	35-45	Medium – 5
Case Study 1 (C1)	Manager – IT Services	35-45	Medium – 6
Case Study 2 (C2)	Chief Executive Officer	45-55	Mature – 9
Case Study 3 (C3)	Director	50-65	Mature – 9
Case Study 4 (C4)	Financial Administration Manager	20-29	Minimum – 2

Table 3: Characteristics of Participants

E-commerce experience was measured via a likert as (Minimum – (0-3), Medium – (4-6), Mature – (7-10)). The data collected from the interviews, discussions and documents were analyzed in order to test the research propositions.

Research Proposition 1 - Trading partner trust is positively associated with perceived benefits of e-commerce.

NZ Customs, outsource all incoming and outgoing transactions' to their ISP, who is responsible for accurately and correctly processing these transactions before transmitting them to NZ Customs for intelligence testing (that is competence trust).

NZ Customs, participant stated *'since, we are paying our ISP, we trust them to provide us with transaction integrity'*. If our ISP is unable to provide us with security and efficiency, then we always have a choice to outsource our business processes to another Internet service provider'. On the other hand the ISP CEO stated *'We have to establish a successful track record in order to survive in a competitive e-commerce environment (reputation)'*. Thus consistent repeated exchanges demonstrated by competence (as in quality of service) from the ISP, led to increased credibility and confidence (that is from competence trust to predictability trust). Similarly, trust in the customs broker began to develop from a series of repeated successful *'deliveries'*, thus demonstrating reliability. The importer stated *'by demonstrating a willingness to share information, that is timely, accurate, and relevant, we are able to perceive goodwill trust from our customs broker'*. *'Goodwill trust was seen in the form of receiving real time accurate tracking information, which saves us a lot of time, costs, thus fostering trust by assisting in resolving disputes, and aligning our perceptions and expectations'*. Therefore, soft methods of trust such as, maintaining confidentiality, learning to accept the other's value system (culture), and accepting traditions (norms of behavior) reduces the need for extreme control safeguards and paper trials, and opens up the willingness to share information and communicate.

Research Proposition 2 - Trading partner trust is negatively associated with perceived risks of e-commerce.

The importer admitted *'we did face initial uncertainties in using Trade Manager which led to dependence on our customs broker'*. *'These interdependencies gradually led to an imbalance of power'*. *'Although, our customs broker did provide us with free software and initial training, we were left in a difficult position'*. *'It is not something that you have outsource but we had to change our internal business processes, in order to facilitate and simplify the business processes of the customs broker which took us some time to get it completely right'*.

Opportunistic behavior between trading partners' was seen as risks. *For example, the importer reported 'our customs broker did appear to exercise opportunistic behaviors, by increasing the charges and costs for clearance'*. This led to functional conflicts and discrepancies derived from a misunderstanding in calculating charges, due to the conversion of currencies and taxes. In most cases the customs broker ended up explaining to the importer on how they derived at the figures thus resolving the issues.

Research Proposition 3 – Trust and security based mechanisms in e-commerce are positively associated with perceived benefits of e-commerce.

NZ Customs suggested that *'the entire process involving intelligence testing was automated and cannot be tampered by NZ Customs employees' or any unauthorized persons. However, when we first implemented CusMod, the error rate was 40-50%, but with tolerance from our ISP, and with adequate training, we now achieve an error rate of less than 10%'*. Furthermore, CusMod produces three outputs namely, CUSDER for customs declaration, CUSCAR for customs cargo, and CURRES for customs response which either confirms or rejects CUSDER and CUSCAR'. *'If the output was confirmed then the system automatically issues a delivery order and invoice, or*

else, returns an error message'. 'The error message in most cases was due to insufficient information about the goods to be cleared'.

The ISP, CEO stated *'we do have a firewall in our systems' which separates the flow of transactions between our trading partners'. 'In addition we allocate unique identifiers for each of our 4000 trading partners'.* Hence, each trading partner logs onto our system via User IDs and passwords, thus achieving confidentiality, authenticity, non-repudiation, availability, and transaction integrity.

Similarly, NZ Customs and the importer reported that *'they have installed anti-virus software programs in their computer systems, in order to protect their databases'.* *'In addition, NZ Customs undertakes a daily backup of their system, and the importer also carries a hardcopy version of all purchase order numbers, invoice numbers, reference numbers as a daily backup in their ledger books'.*

In order, to provide a basis for comparison between technology and trust, some argue that the benefits are directly derived from the technology, rather than the trading parties. Nevertheless, it was strongly agreed by the participants of this study *'that trading partners are the ones who actually input data into the system for responses'.* Therefore, trading partner relationship trust is the key to sustained e-commerce participation, as it fosters open communications, collaboration, information sharing, and tolerance for mistakes.

Research Proposition 4 – Trust and security based mechanisms in e-commerce are negatively associated with perceived risks of e-commerce.

The importer indicated that *'their risks lies in their shipment information being leaked out to other competitors by their customs broker, whom they say sometimes fax documents, and the fax may be seen by unauthorized persons'.* *'The fax actually reveals our quantity of stock imported for each delivery order'.* Hence, there are risks in applying poor business practices (e.g. lack of audits, back-ups) particularly in a small firm where employees perform multi tasks. Hence, trading partner trust is important, as it help reduce opportunistic behaviors.

Research Proposition 5 – Perceived benefits of e-commerce are positively associated with e-commerce participation.

All four cases reported a gradual increase in the volume and dollar value of business-to-business transactions sent and received via e-commerce applications. NZ Customs stated that *'it was a legal thing, we had to provide a statutory declaration via electronic signatures stating that the goods were cleared'.* Furthermore, both NZ Customs and the importer reported that they did save money and time from storage costs. The importer stated *'that our customs broker assists us in maintaining long-term relationships with our suppliers' due to the efficient fast service, and accurate real time information they provide which enables strategic decisions to be made'.*

Research Proposition 6 - Perceived risks of e-commerce are negatively associated with e-commerce participation.

NZ Customs admitted that it was a big decision for them to outsource their transactions to their Internet-Service-Provider. *'Their concern was that poor business practices could lead to perceived risks of e-commerce'.* The time required to train their staff on the new system, and manage their 250 trading partners (comprising of regular exporters, importers, customs brokers

and agents) would have created additional administrative time and costs. *'Although, a cost benefit analysis was seen to be a critical factor in e-commerce participation, we realized that establishing cooperative network of trading partner relationships was equally important, in order for trading partners to communicate, cooperate, and collaborate effectively'*.

CONCLUSIONS AND CONTRIBUTION OF THE STUDY

In this paper we discussed the importance of inter-organizational-trust in business-to-business e-commerce. The findings did support and validate the research propositions outlined in this study. The findings also contributed to theory as inter-organizational-trust in e-commerce was a new concept. Inter-organizational-trust was seen at two levels namely (1) the ability to operate e-commerce applications correctly (technology-hard trust), as in competence to send data that is accurate, complete and correct thereby, enabling transactions to be read and interpreted correctly. The tendency to send incorrect data, due to a lack of awareness, education has led to high costs and expenses, as trading partners need to be trained to re-send the transactions. (2) Trading partner trust (relationship-soft trust) as in the ability to work cooperatively, willingness to support, encourage, share information, and commit to their business, rather than work according to a trading contract.

The contribution to practice and businesses came from an awareness of the importance of inter-organizational-trust by case study participants. They strongly agreed, that they should concentrate on a partnering charter (which focuses on mutual interests), instead of a legal trading partner agreement. Further empirical research via case studies have been conducted in the telecommunications, computer and communications, and automotive industry, in order to investigate the usefulness, and importance of inter-organizational-trust in e-commerce participation. The findings clearly provide evidence that e-commerce can only survive if both technology (hard-trust) and trading partner relationship (soft-trust) exists.

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