

Assurance Offerings for Commercial Enterprise to Business E-Commerce: A Skeleton and Outcome

***Dr. Vishal Pareek**

#Ms. Taranveer Kaur

** Associate Professor(Computer Scienc), Tantia University, Sri Ganganagar(Raj.), India*

Ms. Taranveer Kaur (Scholar, Computer Scienc), University, Sri Ganganagar(Raj.), India

ABSTRACT

The electronic trade confirmations advertise has been assessed to be possibly worth \$11 billion. Until now, the focal point of confirmation administrations has to a great extent been on web trade (and, consequently, business-to-buyer or B2C) related administrations, leaving the business-to-business (B2B) electronic trade showcase generally undiscovered. However, with electronic information exchange (EDI) being commanded by huge organizations and government offices, little to medium-sized firms have attempted to obtain and actualize this innovation with small comprehension of this new time of electronic business. As the omnipresent Internet permits more firms to become EDI-fit, there is a fast approaching requirement for having some free methods for guaranteeing the nature of B2B electronic trade and related strategic approaches.

This need isn't just urgent for littler exchanging accomplices, yet is fundamental to the accomplishment of bigger firms that need to acknowledge decreased process durations, improved client support, and a more noteworthy profit for their innovation ventures by electronically controlling the whole worth chain. This paper proposes a system for conveying B2B electronic business confirmation benefits and examines some likely ramifications for such administrations.

INTRODUCTION

The essential driver behind the development of affirmation administrations is the expanding job that responsibility is playing in social, monetary, and political life. A different arrangement of partners in contemporary associations need the individuals who influence their life to be responsible for the obligations they have expected. Viable decisions about the degree of accomplishment for financial and different obligations rely upon the capacity of the leader to get sound data .

As per the AICPA, affirmation administrations are "free, proficient administrations that improve the nature of data, or its setting for chiefs. Subsequently, confirmation benefits as a rule terms can be depicted as exercises led by trusted, autonomous associations (private or not for benefit) to guarantee as well as approve business exchanges between exchanging accomplices and additionally exchanging accomplices and shoppers. In the electronic business field, this is accomplished by checking the legitimacy of exchanging accomplices, exploring interior control instruments (security and honesty of exchanges), guaranteeing that presentation of administrations is as guaranteed, and that all administrative as well as working strategies are conformed to by each exchanging accomplice. The major destinations of electronic trade affirmation administrations are to diminish dangers, survey interior controls, and increment the purchaser's certainty or assurance in electronic business exchanges. These objectives are accomplished by giving organizations, exchanging accomplices, clients, and people in general everywhere with the "confirmation" that business exchanges led electronically utilizing the Internet, private systems, and online frameworks are protected, secure, and supported by proper inward controls. The affirmation office or assurer gives a "seal of endorsement" that is set on the intrigued business' site and it thusly gets compensation from the guaranteed organization as an expense for administrations delivered.

Electronic business affirmation is conceivably the biggest of the confirmation administrations markets with the possibility to create \$11 billion of income. With an end goal to accumulate a traction in this worthwhile market, different associations and organizations have entered the commercial centre with confirmations for electronic trade frameworks—though principally

cantered around business-to-shopper based web affirmation to date. Business associations and elements offering these types of assistance incorporate, for instance, the Better Business Bureau, Visa, and American Express. Data frameworks experts' associations have likewise gotten included as confirm by the International Computer Security Association's (ICSA) web affirmation seal. The bookkeeping calling has additionally observed open door in the electronic business confirmation field and has propelled most likely the broadest scope of affirmation items and proposed items through the endeavours of the joint team of the Canadian Institute of Chartered Accountants' (CICA) Task Force on Assurance Services (TFAS) and the American Institute of Certified Public Accountants' (AICPA) Assurance Services Executive Committee (ASEC).

Of course, the excitement of the Internet has accepted need as the heft of the accessible electronic trade affirmation administrations propelled to date have been aimed at giving confirmation supporting the security of online trade in business-to-buyer markets. These electronic items were created with the acknowledgment that buyers who purchase products and data over the Internet want affirmation that the data they gracefully in an exchange isn't abused, that the dealer will convey the merchandise or administrations as they were requested by the client, and additionally that the vender's works on in regards to conveyance, claims and com-plaints have been uncovered and speak to the real business forms utilized.. Fundamentally, a dealer wishing to set up believability with clients buys the administration.

The different affirmation suppliers in the confirmation commercial centre have brought a wide scope of item quality to the web. Difficulties in the commercial centre have originated from associations expecting to be the minimal effort elective (e.g., Better Business Bureau with affirmation restricted to organization enlistment with the Bureau), top notch suppliers, (for example, the ICSA Certification and the CICA/AICPA's Web Assurance), and different associations with explicit validity/advantage with customers (e.g., MasterCard, Visa, American Express, and JCB). Proof of the changeability in accomplishment of the items is outlined by the way that solitary 28 U.S. sites are utilizing Web Assurance at the hour of this composition and more than 1,000 sites have bought in to the charge card organizations' security approval administration.

What might appear to hold more guarantee for data frameworks (e.g., ICOSA) and bookkeeping (e.g., CICA/AICPA) experts is centre around business-to-business (B2B) trade where the confirmation suppliers' validity ought to surpass other likely contenders' notorieties and the propelled elements of administrations, which incorporate assessment of the hidden business forms, ought to be considerably more attractive. Take, for instance, the plan of action received by the AICPA (see Figure 1). The model features the key data streams of an association as giving cooperation clients, providers, capital providers, the network, and ability. Web confirmation items are truly focused at the client relationship. Business-to-business trade in such associations is increasingly cantered around providers and different delegates in the worth chain—the conventional focal point of electronic business where electronic information exchange (EDI) has been the prevalent stage. The basic significance of hidden business forms in an electronic trade condition was featured by the challenges looked by business-to-customer e-retailers in conveying Christmas orders in an ideal way in 1999. Moreover, as more organizations move to B2B web based business, firms are thinking that its hard to relinquish accomplices that were known and solid for a progressively serious commercial centre where cost investment funds are basic however the merchants are obscure. This circumstance strengthens our past contentions for the need to create confirmation administrations in the developing region of B2B web based business.

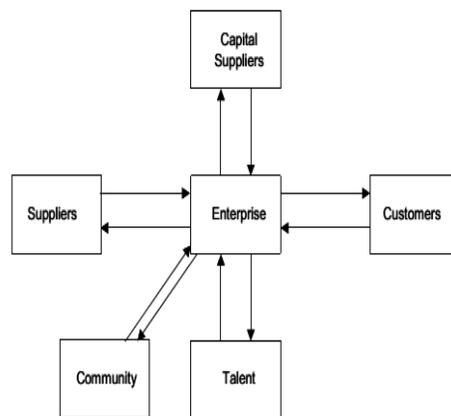


Figure 1. Business Model for an Enterprise's External Information Flows (Adapted from Elliott and Pallais 1997b)

A business-to-business electronic trade centre would really be more on top of the overall help recognizable proof of the CICA/AICPA's TFAS/ASEC team. In talking about the discoveries of these teams, *Elliott* and *Pallais* note that one of the essential assistance openings distinguished is the need to survey whether the data highlights of electronic trade work as per acknowledged rules for assessing the honesty and security of electronic exchanges, electronic reports, and supporting frameworks. In this specific circumstance, *Elliott* and *Pallais* additionally perceive that little is thought about what these standards ought to be and voice the requirement for scholarly scientists to look for "criteria for surveying the uprightness and security of electronic business."

This paper proposes a system for B2B electronic trade confirmation benefits that is grounded in the consequences of an investigation into the idea of EDI-based electronic business and the effect on associations of fluctuating sizes. Maybe of most intrigue are the outcomes demonstrating that numerous little and medium measured sellers experience issues completely coordinating EDI into their inward business forms and that the EDI association turns out to be basically minimal in excess of a celebrated fax machine. As significant organizations, for example, *WalMart* and the Big Three U.S. automakers, and state and national government acquirement organizations order that providers use EDI, a related need emerges for affirmations that such providers are deliberately implementing EDI. This is proposed to abbreviate the time among requesting and delivery and seems, by all accounts, to be a plausible possibility for an appeal administration. These, and different issues, are investigated in the rest of the paper.

FOUNDATION

Business-to-business (between hierarchical) electronic trade, thus forward alluded to as B2B, encourages the administration of providers, stock, appropriation and coordination, channel, and instalment frameworks over the Internet as well as private systems. This type of electronic trade will possibly make up the biggest extent of Internet business. Business-to-shopper electronic trade, from now on alluded to as B2C, encourages the pattern of checking on item data, purchasing items with electronic money and other secure instalment

mechanisms, and in any event, having some electronic products conveyed over the Internet utilizing the World Wide Web (WWW) interface.

EDI is a basic component of B2B electronic trade today and has plainly changed the manner in which associations work together. It has become a basic business instrument for some organizations everything being equal and ventures. In 1995, under 2% of the 5 million to 6 million organizations in the U.S. with income more noteworthy than \$1 million were utilizing EDI (Mohan 1995). Be that as it may, corporate America's EDI-related consumptions are assessed to develop to \$3.8 billion by 2002 (Wilson 2000).¹ Contemporary business practices, for example, without a moment to spare (JIT) producing, merchant oversaw stock (VMI), and fast reaction retailing (QR) depend on the quick exchange of exchange information to increase an upper hand in the commercial centre. Speed, responsiveness, efficiency, and improved client support have gotten key to corporate endurance. Further, firms far and wide have embraced EDI norms, for example, ANSI X.12 or UN/EDIFACT. Hence, EDI (regardless of whether it is led through a VAN or the Internet) has become a key empowering innovation for B2B business and electronic exchange the world over.

Besides, organizations and state and governments are all emphasis-measuring the significance of utilizing electronic trade innovations, for example, EDI and email for upper hand by reengineering business forms and improving client care. Actually, the Federal Electronic Commerce Acquisition Team, in its October 1994 report on "Smoothing out Procurement through Electronic Commerce," required the utilization of Electronic Commerce (EC) advancements to lessen obtainment costs, improve business procedures, and upgrade client support quality. The national government has just finished usage of an administer mint-wide electronic acquisition framework that incorporates concentrated seller registration, cross-referenced databases, different EDI guidelines, money related EDI, and an assortment of "virtual" systems for interchanges (e.g., <http://www.fss.gsa.gov>). The usage of these suggestions is majorly affecting various little to medium-sized organizations around the nation. To represent this point, think about that the Department of Defence (DoD) alone agreements with almost "500,000 or so providers," of which over 99% are private ventures that utilize less than 500 workers (Brown et al. 1999). Moreover, since little to medium-sized

ventures (SME) utilizing under 500 workers comprise 99.7% of all businesses in the U.S., they command the run of the mill flexibly chain of most huge organizations (National Federation of Independent Business 1997; SBA, 2000). Therefore, any new data innovation activity (or goal) from government or state level acquirement offices and bigger corporate associations has basic ramifications for generally little to medium-sized firms.

REVIEW OF EDI COMPONENTS AND PROCESSES

Electronic information exchange (EDI) is the PC to-PC trade of business exchanges that adjusts to determined principles over a communications organize that incorporates at any rate two exchanging accomplices. These cooperations incorporate the trade of basic business data commonly comprising of procurement orders, transporting sees, solicitations, related affirmations, reserves move with banks, and so on. EDI computerizes the moderate; work escalated trading of value-based records in paper structure by means of fax as well as ordinary mail. The EDI enter-prise is a centre of exercises. Centre points speak to the gathering point for exchanges from various exchanging accomplices. For instance, *WalMart* is a centre with in excess of 5,000 electronic snare ups with its merchants. The exchanging accomplices can be seen as spokes. Spokes (merchants, clients, and so forth.) become some portion of the all-encompassing EDI undertaking. Bigger spokes can be centre points of their own provider/client systems. Most SMEs will in general be spokes for enormous centre point associations.

EDI requires five key components:

- (1) Electronic mail for quick close to home (managerial) correspondences;
- (2) Secure on-line systems for fast communications, for example, outsider or worth included systems (VANS) or potentially the Internet.
- (3) At least two associations directing joint, electronic business exchanges (exchanging accomplices);
- (4) Standard conventions for document and message moves (standard EDI message configurations can be those created by mechanical associations [e.g., TDCC/EDIA, VICS,

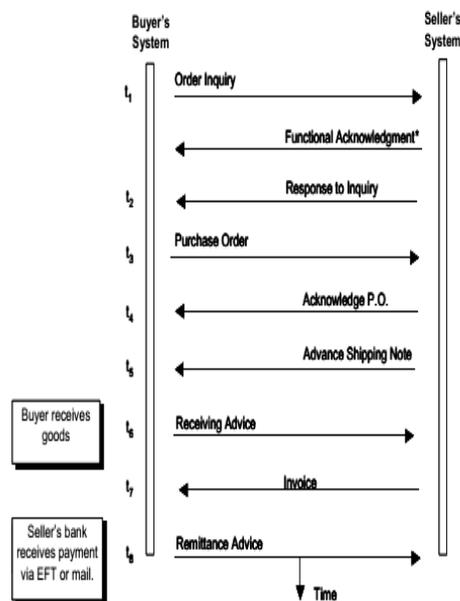
WINS], restrictive [e.g., General Motors], national [ANSI X12] or universal [UN/EDIFACT]); and (5) Information handling errands at both (all) organizations relating to an exchange that are bolstered by autonomous application frameworks. There are three conventional ways to deal with actualizing EDI joins:

- The first methodology utilizes a direct EDI interface among seller and client utilizing a modem and phone line. Numerous enormous centre point associations claim and work a private system administration (e.g., Wal-Mart) that all colleagues are required to utilize. Exchanging accomplices set up interchanges utilizing a dial-up connection to the centre's system.
- The second methodology spins around backhanded EDI joins through worth included systems (VANs) or "outsider electronic clearing houses." These autonomous EDI organizing merchants give the entirety of the important programming and correspondences administrations and basically play out the capacity of an electronic mail station for various colleagues.
- Finally, with the improvement of better Internet programs and Internet good programming that fuses sufficient safety efforts including encryption, the powerful and less expensive Internet is quick turning into the mechanism of decision for communicating electronic archives and messages.

Because of the proceeding with absence of consistent normalization inside ventures right now, a firm is very prone to all the while utilize more than one methodology for EDI transmission. For example, a spoke venture in the car business may use a circuitous connection with a large portion of its purchasers aside from with major EDI centres, for example, General Motors or Ford. Accordingly, GM may necessitate that its exchanging accomplices utilize their restrictive EDI system and principles to connect with each of their overall production offices. In such an occasion, the spoke venture may wind up expecting the weight of keeping up various EDI frameworks.

Figure 2 shows the EDI procedure, sequentially, regarding a lot of commonplace business exchanges between a purchaser and dealer. To begin with, the purchaser's EDI framework starts a request that is consequently recognized by the merchant's framework to demonstrate

that the correspondence was gotten with no blunders. Next, the purchaser's framework starts a buy request that is recognized by the dealer's framework. At the hour of dispatching a shipment, the merchant sends a development transporting note and on the receipt of merchandise the purchaser may send an accepting exhortation. Next, the merchant may send a receipt that is utilized by the purchaser to trigger a settlement exhortation and an electronic finances move (EFT) is produced using the purchaser's bank to the vender's bank (monetary EDI). It ought to be stressed that the time measurement is misrepresented in Figure 2 for lucidity; the time delay between matched exchange occasions is extraordinarily decreased, if not disposed of, in correlation with a paper-based framework.



*All electronic messages from both systems receive an automatic functional acknowledgment to confirm that a transmission was received.

Figure 2. The EDI Business Transaction Process

CONFINEMENTS IN EDI IMPLEMENTATION AND EXECUTION

Lamentably, EDI innovation isn't really a panacea for expanded efficiency. Albeit much is made of the possible favourable circumstances of between organizational frameworks, for example, EDI, numerous organizations (particularly SMEs) receive EDI without sufficient

planning. In result, these organizations don't exploit the maximum capacity of EDI innovation and henceforth get minimal operational or key advantages from its utilization. In certain occurrences, littler, talked endeavours have confronted more work (modify), decreased efficiency, programming issues, continually changing client needs, longer business cycles, contrary message positions, absence of consistent incorporation, and prospering progressing upkeep consumptions.

Consider the accompanying situations dependent on contextual analyses led by one of the creators. An auxiliary of a Fortune 500 business had been utilizing EDI for over five years. In a meeting with the inward review gathering, it was uncovered to the scientist that EDI exchanges were neither tried nor checked by the review office. In one case, an EDI buy request was sent with an additional zero to providers for over a year. The blunder went unnoticed for a noteworthy timeframe on the grounds that the providers getting the mistaken buy request neglected to educate the organization. The providers understood that the amount was a mistake and naturally decreased the amount to be conveyed by a factor of 10 and sent the shipment. In another occasion, a significant retailer commanded an independent venture producer of remedy tanning lights to utilize EDI. The little firm proprietor gave in (since the significant retailer was his biggest purchaser) and executed a restrictive EDI framework. Today, this organization utilizes EDI for getting orders from this significant client and no other. Requests are downloaded from their VAN letter drop and printed. The request data is then rekeyed into their inward assembling/bookkeeping application. EDI innovation is basically utilized as a cutting edge fax machine.

The primary model delineates how even huge organizations neglect to guarantee the nature of data being electronically sent and subsequently neglect to control the dangers related with electronic linkages with exchanging accomplices. The subsequent situation epitomizes the circumstance in various little to medium-sized organizations around the country. As organizations and state and governments are for the most part stressing the significance of utilizing electronic business advancements, for example, EDI, email, and the Web, little firms are being constrained into embracing EDI or other comparable advances without sufficient thinking ahead and arranging. On the off chance that the bigger firms and government

acquisition offices need to genuinely accomplish the efficiencies and long haul advantages of EDI usage, they have to have some affirmation that the little firm guarantees that EDI is coordinated inside and that business forms are reengineered to suit this better approach for working together. Moreover, in the long haul, it is to the upside of both the bigger centre points and their littler talked exchanging accomplices to guarantee that littler firms are more successful in their utilization of EDI innovation. Along these lines, this paper proposes three classifications of EDI affirmation benefits that could affect the capacity of organizations to convey items and administrations in an ideal and cost-productive way. The following area will portray existing models for electronic business affirmation for both B2C and B2B electronic trade, trailed by a conversation of the after effects of exploration led to evaluate the hierarchical effect of EDI on SMEs. This investigation turns into the reason for the improvement of a proposed structure for a more extensive scope of electronic business confirmation administrations in the B2B commercial centre.

ASSURING B2B ELECTRONIC COMMERCE: A GROUNDED CONCEPTUAL FRAMEWORK

Predictable with the strategies upheld for grounded hypothesis, the exploration talked about in this paper centres around the use of a multi-layered way to deal with the improvement of a wide based theoretical model for B2B electronic business. Initial, an assessment of surviving B2C electronic commerce affirmation models that have just been actualized practically speaking was directed. These models were broke down with an end goal to comprehend the components of confirmation that have been picked as significant by the different affirmation suppliers. Second, an assessment was led of the recently presented confirmation administration, Web Assurance ISP, which is focused on additional toward the B2B electronic trade showcase. Once more, our advantage was in the measurements that were distinguished as basic by the suppliers. Third, the consequences of an exact assessment of the authoritative effect of joining EDI-based electronic trade by SMEs in their plan of action were used to increase a superior comprehension of the key issues that could affect the productivity and adequacy picks up that are seen to spill out of the utilization of EDI for B2B

business. The investigation utilized a blend of primer conversations, perceptions, and readings to produce a survey for sorting out the recognized wonders. The consequences of the survey were utilized to fuel extra meetings and conversations with an end goal to substance out the key issues in SMEs' execution of EDI.

B2C E-COMMERCE ASSURANCE

The B2C electronic trade affirmation administrations showcase emerged principally from shoppers' underlying hesitance to make buys over the Internet. To some degree, this was energized by the disappointment of organizations to uncover their information protection and security strategies on their sites, and to a limited extent by frightfulness accounts of credit data being taken over the Internet. Various affirmation seals have been caused accessible that to give a shifting scope of confirmation concerning the security of directing business with the given site. We investigated five such items: the Better Business Bureau, Veri-Sign, ASSURANCEe, ICSA, and Web Assurance.

The Better Business Bureau (BBB) gives the least affirmation. The fundamental prerequisites are that the association must (1) have a place with the BBB, (2) have data on possession and the board recorded at the BBB, (3) be good to go for in any event one year, (4) meet BBB rules for on-line promoting, (5) react instantly to buyer objections, and (6) consent to restricting assertion at the customer's solicitation for uncertain debates.

Veri-Sign spotlights explicitly on security level issues. The essential necessity for Veri-Sign are (1) outsider check of the business substance's enrolment information, (2) space name affirmation, (3) send out controls affirmation with respect to encryption practices, and (4) utilization of Veri-Sign's items that encourage transmission of scrambled information and confirmation of gatherings engaged with an exchange.

ASSURANCEe centres explicitly around security level issues, despite the fact that client grumblings are additionally tended to. The essential necessities for ASSURANCEe are that the association (1) hold fast to ASSURANCEe security strategy divulgence principles, (2) give an on-line proclamation on protection rehearses, (3) react to client grievances agreeably, and (4) permit site consistence audits by autonomous outsiders.

The International Computer Security Association (ICSA) gives confirmation on both security and protection measurements. The transcendent direction is toward a definite trial of security methodology, practices, and gadgets (both coherent and physical). Tests are gone through assessment of the inward development of site security and through far off evaluation by breaking down the site correspondingly to what an outer programmer would do in endeavouring to enter or handicap a site.

Web Assurance, a result of the American Institute for Certified Public Accountants (AICPA) and the Canadian Institute of Chartered Accountants (CICA), is the most exhaustive of the administrations. While the greater part of different accreditations is done on a yearly premise, Web Assurance must be re-established like clockwork. Three standards structure the managing system: (1) strategic approaches and data security must be uncovered on-line and exchanges must be executed as recommended, (2) exchange honesty—i.e., client exchanges are finished and charged as concurred, and (3) the element keeps up successful powers over clients' data.

In breaking down the different items that are accessible in the B2C commercial centre, the spotlight is by all accounts on five measurements: (1) protection issues, (2) business information preparing respectability, (3) security of transmission, (4) security of capacity, and (5) business strategies. Given the monotonous event in the above instances of protection, security and business approaches, any generalizable edge work for electronic trade confirmation should deliver these measurements somewhat.

B2B E-COMMERCE ASSURANCE

Substantially less has been done from an affirmation outlook in the B2B electro-nic trade showcase. From an absolutely confirmation viewpoint, the AICPA/CICA's Web Assurance ISP item is the just one known by the scientists to exist. There are fringe items on the commercial centre that may likewise give understanding and, in that capacity, we additionally look at the EDI detailing systems of Harbinger Inc., which gives data on the EDI ability of specific organizations for an expense.

The AICPA/CICA report, Web Assurance-ISPSM/TM Principles and Criteria for Inter-net Service Providers in Electronic Commerce, features a scope of administrations that an Internet specialist co-op (ISP) could give "for a web based business customer:

- Ongoing Web worker and related innovation design and upkeep
- Internet administration arrangement for web based business and general employments
- Tailoring of an ISP's restrictive request taking and satisfaction programming to empower the customer's particular web based business exercises over the Internet
- All ensuing application framework upgrade, alteration and testing
- Web worker securing, designing and usage
- Communications availability from the Internet through to the customer's business preparing condition
- Telecommunications security
- Internal firewall setup, support and observing
- Maintenance of a safe internet business preparing condition
- Maintaining the privacy of customer data" (AICPA/CICA 1999b).

In an effort to address the risks surrounding these various components, the AICPA/CICA divides the risks into four broad areas: (1) business and information privacy practices, (2) availability of service, (3) security and privacy, and (4) service integrity. To receive the Web Assurance-ISP certification, an entity must correspondingly

Disclose its business and information privacy practices and provide service in accordance with the disclosure, (2) maintain effective controls to provide reasonable assurance of service availability, (3) maintain effective controls against unauthorized physical and electronic access to the ISP's systems and applications and to customer information, and (4) maintain effective controls to provide assurance that customer messages, transactions, and service requests are accurately and completely processed. Hence, akin to Web Assurance for web-based commerce, we also see an emphasis on systems reliability and security, application user support, and general business practices in the ISP certification process described above.

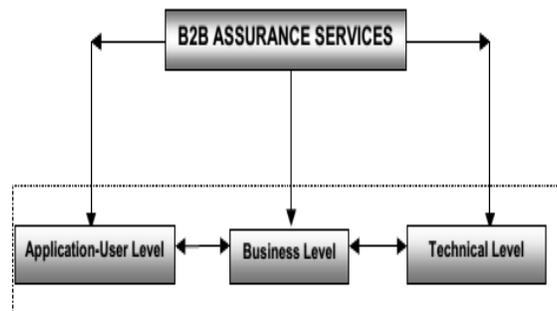
PRIMER B2B ASSURANCE SERVICES FRAMEWORK

The earlier conversation of the current confirmation administrations for both business-to-buyer and business-to-business electronic trade gives an establishment to the underlying improvement of a summed up model for affirmation administrations. So also, the corporate EDI data right now being given by Harbinger gives some proof of interest (at any rate in one specialty advertise) for data on merchants' EDI ability and reconciliation. In that capacity, there seems, by all accounts, to be a possible market for business-to-business electronic trade confirmation.

In figuring our starter model, we utilize the expression "affirmation administrations" as characterized prior in the initial segment of this paper. Considering the different existing electronic trade confirmation items, we propose a summed up model of EDI affirmation administrations as three assistance classifications: Application-User Level, Business Level, and Technical Level affirmation administrations (allude to Table 1 and Figure 3). Every one of these three levels are additionally characterized and clarified in the accompanying subsections.

Table 1. B2B Assurance Services

Category of B2B Assurance	Purpose of Assurance Service
Application-User Level	The services at this level will focus on assuring that trading partners trust and use EDI for conducting business-to-business commerce. This may include assurance issues relating to establishing relationships with new trading partners, developing "good business practices" and related policies. In addition, this level also includes relating to overcoming education and training related challenges of EDI and/or other B2B technologies.
Business Level	The services at this level will focus on assuring that business processes, internal controls, and policies are amenable to EDI adoption and that the processes are altered to allow for seamless integration with the EDI application. This will include addressing legal, privacy of data, and administrative issues for conducting reliable, secure, and safe electronic commerce with trading partners. In addition, this level also includes issues relating to transmission security and managing auditability of B2B (EDI) transactions.
Technical Level	The services at this level will focus on assuring that all technical elements of EDI are in place and that EDI is seamlessly integrated with internal applications. This will include issues relating to transaction integrity, choice of applications, expansion of trading partner base and transaction volume, system reliability, data security (risk assessment) and encryption, and transmission error management.

**Figure 3. B2B Assurance Services**

Application-User Level EDI Assurance Services

The application-user level category of EDI assurance service deals with assisting decision makers in ensuring that their choices and rationale for EDI implementation are appropriate. Thus, activities in this category might include understanding potential benefits of EDI, assessing the current business environment and internal processes, obtaining general information about EDI, assessing organizational readiness for adopting EDI, investigating end users' and customers' reliance on paper-based transactions, assisting with overcoming the impersonal nature of EDI, and conducting pilot tests of transactions to ensure their reliability. Accordingly, a review should also be conducted of all education and training programs to determine the adequacy in preparation of an organization's staff for handling the aforementioned issues.

Such services will most likely be in demand by SMEs attempting to either adapt to the demands of a primary customer or attempting to improve their integration based on existing systems that have been ineffectively and/or inefficiently implemented. Larger organizations that have not yet ventured into electronic commerce from an EDI perspective may also be ideal candidates.

Business Level EDI Assurance Services

The business level category of EDI assurance service deals with assisting decision makers in ensuring that appropriate changes in traditional business processes have been undertaken to incorporate this new method of conducting business and that appropriate controls are in place. The services in this category could also include ensuring appropriateness of EDI for the business itself, assessing whether potential direct/indirect EDI benefits are being realized, addressing legal issues (electronic orders, signatures, legal trading partner agreements, etc.), managing data and transmission security and audit ability (e.g., incorporating dynamic or continuous auditing modules, audit trails, etc.), and reassessing work-flow procedures for efficiency improvements. These changes in business processes will also require review of the concurrent changes in internal control systems to assure privacy of data, reliability of systems, and secure electronic transmission.

Technical Level EDI Assurance Services

The technical level category of EDI assurance service deals with assisting decision makers in ensuring that the necessary technical B2B elements are in place and that integration with external and internal applications is feasible given the availability of financial and technological resources. This category could include a variety of technical services such as determining appropriate internal applications to apply EDI (accounting, manufacturing, requirements planning, etc.), implementing multiple trading partners, mapping customer/supplier data for direct use in internal applications, ensuring that the business transaction process works and includes all necessary EDI transactions, and selecting the means of communications and vendors for VAN and EDI software. The review should also assure that this integration is accomplished through reliable back-office systems integration that ensures the integrity and security of the data captured through EDI transactions.

CONCLUDING REMARKS

Many companies are finding that their traditional supplier and customer networks are no longer an efficient and cost-effective way in which to conduct business. Rather, virtually every organization must pair with new business partners that are prepared and active in B2B electronic commerce. Unfortunately, this means organizations are partnering with organizations they may never have heard of before. How secure are the new partners' B2B systems? Can the new B2B suppliers truly provide increased efficiency in the supply chain through tightly coupled, EDI-enabled business processes?

In considering the results of this study, certain limitations should be considered. First, the sample of organizations surveyed represented the known population of EDI organizations in only one state—Kentucky. However, there is no reason to believe that such organizations would not be representative of the many SMEs across the continent that are being required by vendors, suppliers, or others in the value-chain to participate in EDI-based transactions. Second, the nature of grounded theory is such that the researchers' lens for examining and observing the phenomena of study may not be completely

unbiased. However, the researchers in this study pursued the investigation with no prior expectations of findings and, consistent with the advocated approach for grounded theory studies, focused on allowing the observed phenomena to drive the perceived relationships in the framework. As such, the authors believe the proposed framework should be useful to practitioners and researchers alike who are interested in the opportunities for electronic commerce assurance services.

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