

Effects on International Trade and Trade Finance of a Transition to Electronic Methods

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ABSTRACT

Malone, Yates & Benjamin (1987) made predictions about the impact of information technology and systems on the organisation of firms and markets based on transaction cost effects discussed earlier by Coase (1937) and Williamson (1975). Evans and Wurster (1999, 2000) examined these ideas in terms of “richness and reach”. Berger, Hancock & Marquardt (1996) proposed a framework for analysing efficiency, risks, costs and innovations in the payments system. In this, they called for additional research into risks and costs in various aspects of the international payments systems and offered a framework for such an examination. This dissertation examines these and other authors’ work from the literature, follows the development of actual systems newly implemented for international trade finance, and considers the impacts of electronic commerce on the field of international trade finance, in particular its effect on the costs and risks involved. This question is important because the burden of paper-based documentation that controls international trade is approximately 6% of \$USD7.5 trillion per year. If efficiencies, even small ones, can be gained in this overhead cost, at an acceptable level of risk, then a substantial saving in real dollar terms can be achieved each year, improving the efficiency of world trade and easing the burden on both suppliers and consumers worldwide.

The research questions are examined by means of a three round Delphi survey (three iterations of questionnaires with analysis and feedback between rounds) of a panel of experts drawn from international bankers, users of trade finance, and academic researchers into international trade finance and e-commerce. The survey first identifies the factors of greatest import and interest. It then digs deeper and seeks consensus on areas where there is divergent opinion, and finally seeks to critique a model based on the Berger, Hancock & Marquardt (1996) model. In the process the panel is able to estimate the approximate size of shifts in both costs and risks expected from the implementation of e-commerce methods. These are examined in light of the Malone Yates & Benjamin (1987) and Evans & Wurster (2000) theories and found to be consistent. This empirical confirmation of theoretical expectation, combined with estimates of the size of change are then used to make specific recommendations to various participants in the field of international trade finance so that they can reap the benefits of the transition in process.

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Much thanks are also due to my supervisors: Dr Christian Bauer, for his guidance, critique and encouragement from the start, and who in his own time continued to supervise my progress from a distance when I changed universities upon closure of the Electronic Commerce Network research centre at Curtin. Dr Peter Goldschmidt, for his flexibility in providing a sounding board, guidance and encouragement from the time we met at a local conference and soon after under his supervision at the University of Western Australia where he welcomed me after the closure of Curtin's Electronic Commerce Network. Thank you both.

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Thank you to all the experts in international trade that responded to my invitations and requests to participate. Their opinions, insights, suggestions, and patience have provided the information essential to this research.

I am also indebted to researchers and innovators who worked and published in the fields relevant to this dissertation. Specific acknowledgment of these people is provided in the section below, "Statement of Candidate Contribution".

STATEMENT OF CANDIDATE CONTRIBUTION

This entire dissertation is the original contribution of the candidate, Mark Kimberley Dixon, with the following caveats:

- Statements and ideas of other authors referred to in the text and diagrams are cited and referenced according to the author-date (Harvard) referencing style.
- The general research area, e-commerce for international trade, was brought by the candidate to early discussions with external supervisor Dr Christian Bauer and head of the ECN electronic commerce research centre Dr Bernard Glasson. Drs Bauer and Glasson guided the candidate in the selection of a scope of work sufficiently focused for PhD work. Through discussion and recommended readings Dr Bauer also guided the candidate in selection of appropriate methodology for selecting specific research questions, model building, sample selection, and data gathering.
- Early investigation, literature review, model building and hypotheses were written up and presented at conferences to formalize candidate thinking and writing, and to submit ideas for critique from researchers in the field of electronic commerce and international trade. The conference papers are listed here, each with a statement of contribution:
 1. Dixon, M. & Glasson, B. 1999, 'Electronic Payment Systems for International Trade', Western Australian Workshop on Information Systems Research 1999, Murdoch University, Perth, Australia. This paper was predominantly a literature survey, submitted to a local workshop conference for peer comment. The paper was blind refereed by two reviewers before acceptance. Professor Glasson provided guidance on academic style and editorial review before submission; in all other respects this was the candidate's work.
 2. Dixon, M. 1999, 'Streamlining International Trade Payments', International Workshop on Transaction-based Electronic Commerce 1999, Curtin University, Perth, Australia. This paper proposed research ideas for discussion at a local workshop conference. The paper was blind refereed by two reviewers before acceptance. Supervisor Dr Bauer provided editorial

review before submission; in all other respects this was the candidate's work.

3. Dixon, M. & Bauer, C. 2000, 'Emerging Electronic Systems for International Trade', The fifth COLLECTeR Conference on Electronic Commerce, Brisbane, Qld. This paper made predictions on potential market changes to do with competition and consolidation in the field of electronic trade finance services, for discussion at a national e-commerce conference. The paper was blind refereed by two reviewers before acceptance. Supervisor Dr Bauer provided ideas on the theory and models used for making the predictions plus editorial review before submission; in all other respects this was the candidate's work. (COLLECTeR - Collaborative Electronic Commerce Technology and Research, is a joint venture by several universities' research centres to develop expertise in Electronic Commerce. See: <http://www.collecter.org/>).
4. Dixon, M. 2000, 'Electronic Commerce Systems for International Trade', Australasian Conference on Information Systems Doctoral Consortium, December 5, Brisbane, Q. This was a presentation to a doctoral consortium of fellow PhD students to a panel of internationally acclaimed information systems researchers. A summary of the literature, proposed research questions and proposed research methods were laid out, and critiqued by the panel and fellow doctoral students.
5. Dixon, M. & Bauer, C. 2000, 'A Model for Comparing Electronic International Trade Systems', Proceedings of the Third Western Australian Workshop on Information Systems Research 2000, November, Edith Cowan University, Perth. This paper presented a refinement of the theoretical model and research questions and a review of the proposed method to a local information systems workshop. Papers for the workshop were blind refereed by two reviewers. Discussion of theory and models, plus editorial oversight, were provided by supervisor Dr Bauer; otherwise the content of the paper was the work of the candidate.
6. Dixon, M. & Bauer, C. 2000, 'Towards a Generic Model of Electronic International Trade Systems', Proceedings of the Eleventh Australasian Conference on Information Systems, December 6-7, Brisbane, Q. This paper

explored models for comparing international trade systems in an information systems context and was presented to a national conference on information systems. The paper was blind refereed by two reviewers. Discussion of theory and models plus editorial oversight were provided by supervisor Dr Bauer; otherwise the content of the paper was the work of the candidate.

- The development of ideas arising from the early work described above were further tested by submission to an electronic commerce trade publication and applied to two papers in the field of marketing co-authored with academic colleagues from the marketing department at the candidate's university. The trade publication *e-mmerce* selected the article 'International Money Movement' (Dixon 2000b) as its cover story for their June 2000 edition.

An academic colleague in marketing, Fang Liu, presented a working paper on e-commerce and marketing in China for departmental discussion, and based on comments from the candidate, requested the candidate to review elements of the paper, and to contribute editorial content to prepare the paper for publication. This work was presented by Liu in New Zealand in December 2001, and published as 'Communication Media and Trust Building in the Chinese Online Buying Context' in the double blind peer-reviewed Proceedings of the Australian and New Zealand Marketing Academy (ANZMAC) Conference 2001 (Liu, Dixon, *et. al.* 2001). With critique from that conference and further editorial revision from the primary author and the candidate, a revision of that paper was submitted for double blind peer review as 'Exploring Online Buying and Online Trust in China' and appeared in Zwick, R. & Ping, T. (eds.), *Asia Pacific Advances in Consumer Research*, Vol. V, 2003 (Liu, Dixon, *et. al.*, 2002). The paper was presented by the candidate to the Beijing conference in 2002.

The *e-mmerce* article was entirely the work of the candidate, but oriented to commercial readers and thus more journalistic than would be suitable for inclusion in this dissertation. It is not used here. The candidate's contributions to the two marketing papers was less than 20% of their content; they have not been included in this dissertation as their marketing focus is not compatible with the core direction of the thesis.

1. CHAPTER 1 – INTRODUCTION

1.1. Background

Exchanging goods for the goods of another person was one of mankind's earliest activities. Barter pre-dates written history; and its later adaptation, consideration in the form of money, is also ancient. Early civilizations such as the Phoenicians extended the practice of trade over large distances to obtain, and supply, goods not available locally (see for example the Egyptian relief at the tomb of Kenamon at Thebes (Kenamon c. 1400 BCE)).

The examination of international trade as a significant economic force is one of the earliest topics of economics (see for example Smith (1776)). Ricardo (1817) proposed that international trade is always beneficial for those nations that participate, even when those trading nations produce the same goods as each other. Heckscher (1991) and Ohlin (1933) extended Ricardo's ideas in their factor proportions model in the 1920s to demonstrate, among other things, that when countries move to free trade, they experience an increase in aggregate efficiency.

International trade, as distinct from local trade, usually involves a dilemma: when a buyer and a seller are a great distance apart, goods, and payment for those goods, must be conveyed between the two parties via some third party or mechanism. There are also time delays involved. A seller must consider the risk of sending goods before receiving payment, while a buyer must consider the risk of sending payment before receiving the goods. Therein lies the dilemma: who will act first? A buyer may also require credit to finance the gap between ordering and the use or disposal of goods. A seller may require credit to fund the production of goods while awaiting payment. The third parties involved in conveying the goods, the credit, and the payment must be trusted by both buyer and seller, and mechanisms must be in place to reduce the risk of one party sending goods or payment before the other has paid or sent. This dilemma gave rise to international banking relationships and mechanisms to resolve the issues of trust, timing and credit.

Financial support for international trade has ancient origins. Archaeological finds in Mesopotamia provide evidence of temple deposits and interest charges thousands of

years before the current epoch. Receipts for deposits in the temple were sometimes transferred to third parties providing a form of money. Considerably later, the Templar and Hospitalier Knights provided for the financial credit and transfer needs of crusaders, travelling traders, and international trade in general. The *bill of exchange* document appears to have emerged from this period, although similar instruments may have been in use much earlier (Davies 2002).

Every legal jurisdiction has, over time, established a body of law to deal with the rights and responsibilities of those engaging in international trade. There have been efforts throughout history to harmonize the conduct of international trade to reduce ambiguity in those rights and responsibilities. In particular the United Nations Commission on International Trade Law (UNCITRAL), established in 1966, has worked to harmonize: international sale of goods and related transactions, international transport of goods, international commercial arbitration and conciliation, public procurement and infrastructure development, international Contracts for the Construction of Industrial Works, international payments, electronic commerce, and cross-border insolvency. UNCITRAL (1996) has recommended “model” laws which have been adopted by most nations and states (see <http://www.uncitral.org/uncitral/en/index.html>).

Given its longevity, the mass of law in all jurisdictions that has developed around it, the size and volume of transactions, and the risks associated with fraud or error in its performance, international trade is necessarily complex, and slow to change.

This dissertation deals with the effects of recent changes to the conduct of international trade, specifically the effects of electronic commerce on the risks and costs of conducting international trade. This introduction has provided the background to the study. Chapter 2 discusses the literature relevant to the topic and identifies the research questions and hypotheses. Chapter 3 identifies research questions that emerge from the study of the literature, and also considers an early model to be used for discussion in the data gathering phase. Chapter 4 explains the Delphi method, why it was used here and how it was applied to the research questions raised. Chapter 5 lays out the findings of the research. Chapter 6 concludes with recommendations to participants in international trade, a commentary on the limitations of the research, and areas of research that follow from this work.

1.2. Scope

This dissertation examines the effects on international trade of a transition from paper-based to electronic methods in international trade finance and payment systems as shown in the diagram below (Figure 1). While the automation of international trade is the broad scope of the work, it focuses on the finance and payment of trade and then examines the details of the effect of a transition from paper-based to electronic methods, with particular attention to impacts on costs and risks to all parties concerned.

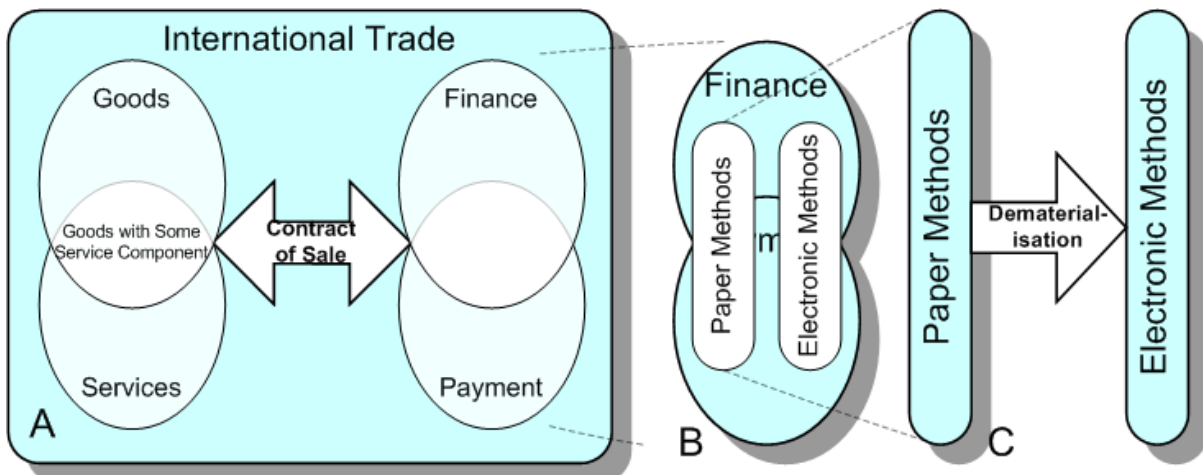


Figure 1: Locating this topic within the practice of international trade.

International trade can be considered the supply of goods and services across international borders along with the payments for those goods and services. As demonstrated in part A of the diagram, to consider merely the movement of goods or of goods and services is to ignore half of trade, the half in the payments side. The word “half” is almost literal, in that payment for goods and services is approximately equal in value to the goods and services themselves. This is the essence of any contract of sale: the exchange of value for value, where one or both sides of an exchange is usually measured in monetary terms. There is of course a percentage of trade that involves barter, that is, goods in exchange for other goods, or in exchange for services, instead of payment in money. When evaluating payment in the context of international trade, payments are of a scope somewhat less than the total value of all goods and services movements across borders.

Part A of the diagram details the linkage between goods and services on the one hand and finance and payments on the other. The link for any given transaction is a contract

of sale detailing the exchange plus the mechanisms for exchanging the goods and the payment. The mechanisms of exchange are the areas of interest for the purposes of this dissertation; however, a few observations will clarify the context further:

- Goods and services are usually considered distinct. However, some goods are sold with a service component; for example, a contract of sale for complex equipment might include provision of installation, training and ongoing maintenance of the equipment.
- Payment, on the other side of the exchange, operates within the context of finance. The relationship between payment and finance is not a simple subset; rather, some payment, such as bank transfer or bank draft, can be viewed as independent of financing; letters of credit are a payment method that involves one or more banks financing the transaction; and other forms of finance, such as export credits from a government agency, are usually financial support for the vendor independent of the payment mechanism.

The overlap of finance and payment, is presented in part B of the diagram. This dissertation focuses on paper-based methods and their “de-materialised” counterparts, electronic methods. De-materialised trade documents and methods exist in the form of database records and messages sent over electronic networks. Similar to the overlap considered in part A of the diagram, both paper-based methods and electronic methods serve the whole gamut of finance and payments, including the overlapping portion. For example, the bill of lading instrument is traditionally a multi-part paper document that is physically transported from seller to buyer via their intervening banks; a letter of credit is traditionally paper and is sent from buyer to seller via the banks involved.

This research focuses on the effects of a shift in practice from paper-based methods to electronic methods, and this is highlighted in part C of the diagram. This research contends that this shift, from paper to electronic methods in the payment and financing sector of international trade, has implications for and repercussions on the whole. These repercussions are examined and analysed in the concluding chapter.

1.3. Size of trade and cost of paperwork

UNCTAD (2005) figures (shown in Table 1) put cross-border trade at about \$USD 7.5 trillion of worldwide merchandise per year. Over the past few years, estimates of the cost of processing paperwork for that trade range from \$US420 billion per year according to Reinbach (1997) and Clarke (1999) and “between \$US400 billion and \$US450 billion a year” according to Field (2003); that is, between 5.3% to 6% of worldwide merchandise trade.

ECONOMY	YEAR:	1970	1980	1990	2000	2001	2002	2003
World	Exports	316,449	2,031,874	3,491,451	6,364,080	6,121,807	6,396,697	7,443,692
	Imports	329,545	2,072,819	3,612,808	6,555,066	6,310,769	6,534,518	7,614,588
Developed economies	Exports	237,353	1,326,934	2,516,733	4,158,604	4,042,000	4,176,111	4,803,196
	Imports	249,132	1,470,305	2,638,979	4,536,530	4,370,813	4,493,510	5,191,749
Developing economies	Exports	60,761	597,931	845,411	2,034,820	1,908,835	2,038,639	2,410,871
	Imports	61,860	495,422	814,142	1,900,383	1,804,472	1,890,493	2,229,506
South-East Europe & CIS	Exports	18,334	107,008	129,307	170,657	170,972	181,948	229,625
	Imports	18,554	107,091	159,687	118,153	135,484	150,515	193,332
Less Developed Countries	Exports	5,348	15,301	19,658	35,951	36,043	38,872	44,226
	Imports	5,405	24,264	25,516	42,596	45,915	47,005	55,959

Table 1: Value and shares of merchandise exports and imports (UNCTAD 2005) All figures in \$USD millions.

1.4. Mechanisms of trade

The sizeable cost of dealing with trade is largely due to the quantity and complexity of documentation required. Further, much of that documentation is in the form of tangible paper documents which require physical shipment, often independently of the goods. That physical movement results in delays, multiple manual re-entry of data in the documents, and dealing with errors that occur through to human handling. Mismatches between separately generated documents, such as the details on a letter of credit compared to the shipping documents presented to collect payment, also cause substantial delay and cost. These discrepancies, as they are known in the trade, occur because the payment documentation is generated by, or on behalf of, the buyer; while shipping documentation is generated by, or on behalf of, the seller. Due to the importance of paying for exactly what was ordered, a payment will be made only if the payment and shipping documents match exactly. When discrepancies occur, payment and delivery are delayed.

Complexity is a significant factor in international trade transactions. A standard international trade transaction typically involves at least four parties: the buyer, the seller, the buyer's bank which issues the payment documents, and the seller's bank which matches the shipping documents to the payment documents before giving the seller payment. It is also typical to have other parties involved in a trade transaction. For example, an insurer will issue a certificate of insurance on the goods transit, a buyer's inspection agency will issue a certificate of inspection to ensure goods match the specifications in the contract of sale. Government agencies may issue certificates of origin and export or import clearance. Other government agencies are likely to be involved to levy taxes on imports or exports and to inspect goods for quarantine or national security. To successfully complete a trade transaction, the documentation from all these parties must be complete, and in many cases the detail text of documents must match exactly before delivery or payment can proceed. This makes international transactions significantly more complex than domestic transactions, and as a result the task of automating them has lagged behind domestic movements toward electronic commerce. Some of the computer and network based systems that have been launched in the past five years to deal with this complexity are discussed below.

To consider the emerging electronic systems that attempt to deal with the complexity of trade it is necessary to understand the documents they endeavour to replace. The most commonly encountered documents are as follows:

A letter of credit is a promise to pay, usually issued by a bank, on behalf of a buyer. Buyers often do not have sufficient financial credibility on their own to satisfy the needs of an overseas seller; but the buyer's bank does, and issues its guarantee of payment to the seller in the form of a letter of credit, at a modest cost to the buyer.

A bill of exchange, often called a draft, is a document issued by a seller, called the "drawer" of the bill, to a buyer called the "drawee" and later called the "acceptor" once the bill is accepted as payable. Bills of exchange also nominate a "payee", usually a bank acting on behalf of the seller, which is also called the "endorser". Bills show an amount payable and the date or dates when the amount is to be paid. A bill of exchange is usually presented by a seller along with a copy of the shipping documents for the goods being sold. Once the buying party accepts the bill it acknowledges its legal commitment to pay the amount on the bill to the drawee at the time specified.

A *commercial invoice* is a document issued by a seller that details the names and addresses of both buyer and seller. The invoice refers to a contract of sale and other documents involved in the trade transaction, such as purchase order and insurance documents. It contains detailed descriptions of the goods, their quantity, price, weight, size, and the markings on the packing materials they are shipped in. The invoice also specifies payment arrangements and shipping arrangements, in particular the terms of shipment such as FOB or CIF.¹

The shipment of goods is usually insured and so *certificates of insurance* usually form part of the documentation required in a trade transaction. The insurance documents specify whether the goods are insured for loss at sea or during air or land transport, and whether the coverage includes storage in transit, before, or after carriage.

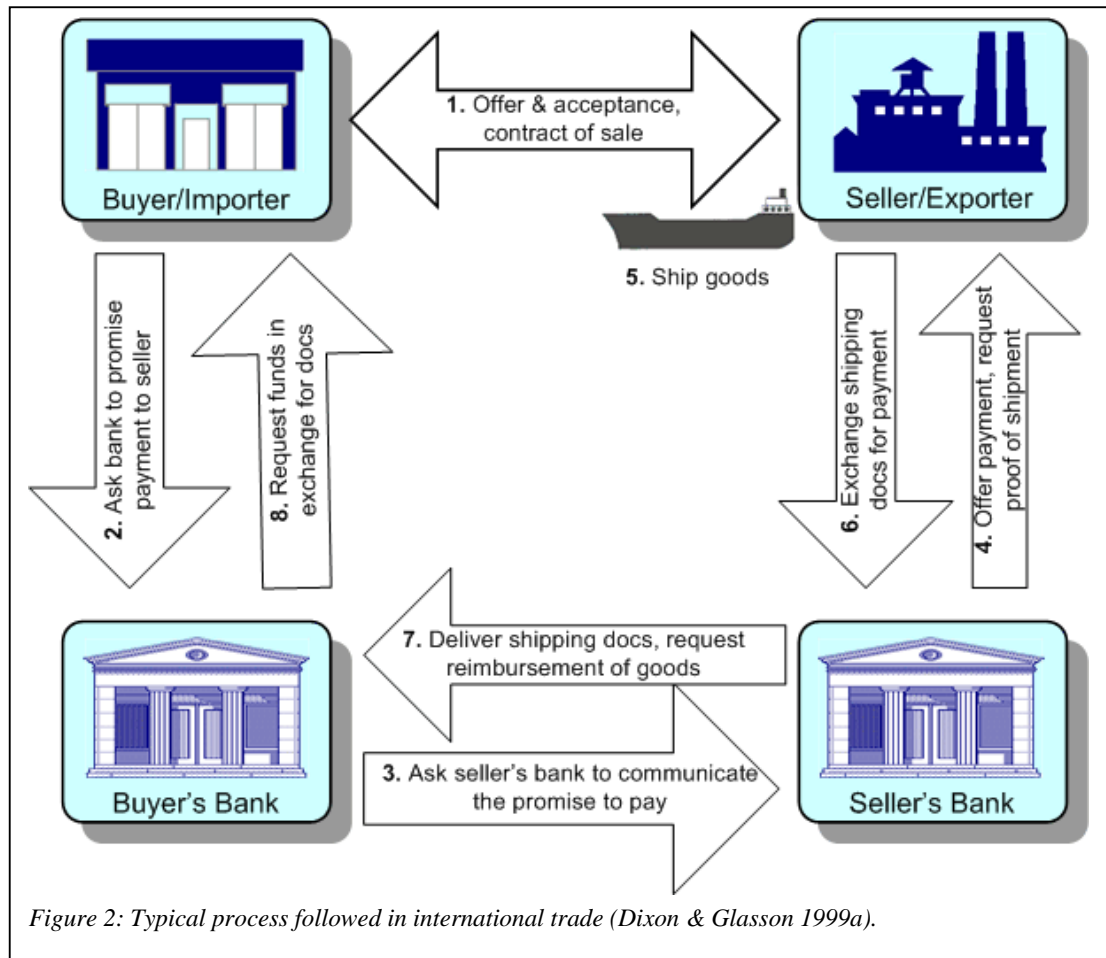
The *contract of carriage* will usually be one of the following:

- a bill of lading;
- a sea waybill;
- a charter-party document for sea transport;
- an air waybill for air freight;
- a freight forwarder's lading document if the transport is being coordinated by a freight forwarding company;
- a multi-modal transport document for goods that will be transported over a combination of land, sea, and air.

Of these documents, the bill of lading enjoys a special place at law. The bill of lading is not just a contract for transport of goods, it is also a document of title, or ownership, of those goods. Typically the holder of a bill of lading has legal claim to the goods, where the holder of a waybill, multi-modal document, or a freight forwarder's lading bill cannot claim ownership by force of the document alone.

For a trade transaction to be complete the buyer must receive the goods and the seller must receive payment. Figure 2 illustrates the process by which these events occur.

¹ FOB, CIF, EXW, FCA, FAS, CFR, CPT, CIP, DAS, DES, DEQ, DDU, and DDP are standardized commercial terms for the delivery of goods as defined by the International Chamber of Commerce (ICC). They are known collectively as INCOTERMS. Each acronym is associated with agreement about which party arranges and pays for the carriage of the goods, and when and where the risk of replacement and the cost of carriage passes from seller to buyer. See http://www.iccwbo.org/index_incoterms.asp for the definition of each INCOTERM acronym (ICC 2005).



This diagram is from preliminary research for this dissertation (Dixon & Glasson 1999a). In short, after a buyer and a seller agree on the terms of sale for goods (arrow 1 in the diagram), the buyer will ask a bank to issue a letter of credit to the seller (arrow 2). The buyer's bank will often communicate the letter of credit to the seller via the seller's bank (arrows 3 and 4). In such cases the seller's bank is referred to as the confirming or corresponding bank. The seller will ship the goods (arrow 5), but retains title to (ownership of) those goods, either by holding a bill of lading, or if there is no bill of lading by consigning the goods to the importer's bank or some other trusted third party in the destination country. The seller takes the shipping and other export documents to the confirming bank and presents them with a copy of the letter of credit in request of payment (arrow 6). If the documents presented match all the terms of the letter of credit, the seller is paid by the seller's bank. That bank obtains the shipping and other documents that the seller presents and sends them to the buyer's bank for reimbursement (arrow 7). The buyer's bank pays the seller's bank, and contacts the buyer to arrange exchange of the documents for payment of the amount of credit (arrow 8).

This process ensures an orderly transfer of both goods and payment. It minimizes the risk of non-payment by the buyer or non-shipment by the seller. It is the solution to the international trade dilemma mentioned above and is a process that has developed and been refined over centuries. Most banks in most countries have adopted a uniform set of practices to deal with these processes, defined by the Uniform Customs and Practice (UCP). This code of practice has very strong support in the courts in all trading nations so that the privileges and responsibilities of all parties to international trade are quite clear.

Knowledge of this process assists in understanding the new systems that have been emerging since 1999 to replace one or more parts of this paper-based system. Several new systems are described in the following chapter.

1.5. Challenges wrought by change

There has been a growing need for change in the way we trade goods between countries. The volume and value of trade over the past century has grown substantially. The nature of doing business has moved towards “just in time” and “quick response”. Fortunately, information technologies have matured in both power and sophistication to enable substantial automation of processes that were formerly paper-based and somewhat labour-intensive. However, along with change comes challenge.

Changes to multi-party multi-trillion dollar a year operations that are distributed around the globe come at substantial cost, at least initially. Such changes involve new risks. They also require action on behalf of everyone involved. Banks must implement or update electronic systems internally. They must make these systems inter-connect with those of other banks and with new extra-bank bodies that act as clearing houses or communication hubs. Importers, exporters, freight forwarders must make changes so that they can use the new systems. Government agencies must make some adjustments, and in improving their own systems for customs, quarantine and the like also impose further change on the other participants in trade.

In assessing the impact of this change, the clearest challenges appear to be:

- Requirements in capital investment and organisational change;
- Risks of disruption, fraud, potential for failure, and other risks;
- Costs involved in the implementation and ongoing operation of new systems.

These challenges will be discussed in the following chapter in the discussion of the working model that was used as a basis for questionnaire formulation, and in discussion with research participants.

Significant work has been done on the detail and effects of organisational change wrought by technological change, in particular, the impact of Electronic Data Interchange (EDI) and more general electronic commerce methods and technologies to the operation of domestic business. The literature survey in Chapter 2 gives specific examples. The complexity of international trade, however, means that these innovations have been largely avoided by traders and banks, apart from very limited adoption of EDI by some of the larger participants.

Some extrapolation is possible based on the impact of EDI and electronic commerce on domestic inter-business trade. Some conjectures have been made about some of the outcomes (example, in Dixon & Bauer 2000a, 2000b). What is lacking is an empirically informed assessment of the impact currently occurring in requirements, risks and costs, and informed expectations of the future impact of change as new systems obtain widespread adoption, mature, and then consolidate.

This dissertation speaks to the need for empirically based predictions of the impact of trade finance moving from paper to online. In particular, it addresses shifts in costs, risks, and competitive forces. It describes and discusses a project that solicited, collated, and then refined with a three round feedback process, the expert opinion of three disparate but interacting groups of participants in the field of international trade. The process in brief was as follows:

1. A survey of background literature was used to determine applicable theory. It sought to determine three factors: which types of participants in trade are affected by a move from paper to electronic methods; what costs and risks they should expect; and what will be required of them to make the transition. The literature survey and analysis appears in chapter 2.
2. An interview with a senior local business banking official, the head of international trade finance from a local bank, was used to “reality check” the early direction of the research and to assist in identifying expert participants.
3. Lists of leading individuals were identified from three groups: international banking; users of trade finance and others that service the industry; and

academic and organisational researchers studying international trade finance and electronic business methods. See chapter 3 for details.

4. These people were invited to participate in a three-round Delphi survey to collect, collate and return the participants' expert opinion on the impact of change in international trade. Details of this step are described in chapter 3.
5. The results from the literature survey were used to prepare an exploratory questionnaire to refine the field and parameters. Details of preliminary questionnaire preparation appear in chapter 3, but the main discussion of this part of the process is in chapter 4.
6. Responses from the survey were collated to ensure lists being considered were complete, and common themes and new ideas were identified. See chapter 4.
7. A second round of questions, based on the outcomes of the first round, was designed to explore more deeply the issues arising. Some questions sought to find clarity or consensus on responses from round one. Each participant was sent the summary and analysis of round 1 results with the second round questionnaire. See chapter 4.
8. Responses from the second questionnaire were collated. Areas of divergent opinion were identified. Insights provided by participants were identified. The original model used for discussion was at this point replaced by a model that provides a measurement mechanism to help predict the direction and approximate size of shifts in cost and risk as change sweeps through the field of international trade finance. See chapter 4.
9. Questions designed to find consensus on areas of divergent opinion, and questions designed to solicit opinion and critique of the new model, were built into a third and final round questionnaire. See chapter 4.
10. Participants were sent the summary and analysis of round 2, a description of the model, and the third round questionnaire. See chapter 4.
11. Analysis of the third round responses, along with some of the insights submitted in the first and second rounds, provided a set of recommendations for banks, users of trade finance, and government agencies dealing with trade. These outcomes are described in chapters 4 and 5.

12. A summary of the third round results were sent to participants along with a short “exit survey” to review the process and solicit ongoing contact for future research.
13. An interview was held with a senior business banking person, and with the head of international trade from the state branch of an international bank. These people were new to the research, coming from a different bank to the one mentioned in point 2 above; they were not members of the interview panels. This interview was to review the findings in a fresh light.
14. The results and analysis are reported in full in this dissertation.

1.6. Contribution

The research reported in this dissertation uses a collation of expert opinion, over successively refined surveys, to empirically test theoretical expectations of the effects of a shift from paper-based to online trade finance. That enables recommendations to be made to participants in various sectors of international trade.

- This research validates expectations that apply to international trade finance of the theories of Malone Yates & Benjamin (1987), Evans & Wurster (2000), and Berger, Hancock & Marquardt (1996). The expectations of expert participants in the field of trade finance supplied expectations consistent with these theorists in most detailed questions concerning costs, risk, and requirements for online trade finance.
- Some of the expert opinion was unexpected. For example, opinion was spread on the issue of whether electronic systems would reduce “discrepancies” in the handling of letters of credit. Opinion was also spread on the issue of whether electronic systems would improve security and reduce fraud. The comments associated with these questions clarified the apparent disagreement and these findings were fed back to the panels of experts for critique and more detailed comment.
- The validation of theoretical expectations, plus the ideas that arose in the comments, have been analysed to construct advice to participants in the field of international trade and trade finance, namely: bank and non-bank financial institutions; importers; exporters; regulatory bodies; and researchers. These points of advice are enumerated in the final chapter of the dissertation. The participant groups in this list stand to gain from the advice because it provides estimates of shifts in costs and risks to their

industry. Armed with this information participants should be encouraged to embrace process changes, even if they have been reluctant to change in the past.

Novelties in research process have also been tested in this research. In particular, the collection of qualitative survey responses from participants around the globe by means of world-wide-web forms, as an alternative to in-person or paper-based questionnaires, was very successful (and appropriate). However, the use of an online discussion forum was found to be of limited additional value as an adjunct to the Delphi method opinion gathering.

1.7. Significance

This research validates theoretical expectations, with some caveats concerning the nature of change in certain aspects of trade finance. It also provides an estimate of the size of some of those changes. Refining the measure of change to specific costs and risks will require further empirical research. However, given the enormous volumes and values of trade (see Table 1), and the hefty overhead of around 6% that is consumed in documentary handling, even a very small improvement in the ability of importers, exporters, or banks to efficiently deal with the risk and cost of trade can make a sizeable difference in dollar terms. This research provides an incremental improvement by providing the information and advice needed to encourage active participation in the new online methods of trade finance. As well as encouraging existing trading partners and facilitators to move to online methods, this research should encourage new entrants to international trade, particularly smaller importers and exporters. With a greater level of participation, and higher volumes and values of trade, the world economy will benefit in buying and selling countries alike. Consumers will benefit through flow-on effects of improved efficiencies, and government revenues will also increase due to greater volumes and values of trade, even where taxation rates might decline on a per-transaction basis.

1.8. Conclusion

With this background and general aims of the research in mind, the following chapter examines the extant literature on the topics involved.

2. CHAPTER 2 – LITERATURE SURVEY

2.1. Introduction

The subject of this thesis is the contribution that electronic commerce can offer to the fields of international trade and trade finance. The literature supporting this topic is at the boundary of these two research areas. This chapter will explore the literature concerning the general area of international trade and trade finance, and then consider the literature dealing with electronic commerce and its ability to support those areas.

Academic, organisational, and trade journals all have important contributions to make in this field as they extend the boundaries of practice in the fields of banking, import and export, trade regulation, and international finance, as well as providing a rich vein for research. This chapter identifies some areas that require empirical evaluation, and which become subjects treated by this dissertation. It also describes an early model proposed for discussion, and a refined model that emerged after critiques from respondents.

2.2. Characteristics of International Trade

International trade is essentially the same as trade between local businesses or even between individuals in the same country. The perception that nations trade with each other is not accurate; it is actually individual parties, such as businesses, that trade across national borders. Trade between any two parties is voluntary and will not occur unless both expect to benefit from exchange. Despite these similarities, complexity of international trade is greater than that of domestic trade, as has been explained above; and payment methods are usually different.

Domestic and international trade both have the effect of developing specialization and interdependence through value-chains of productivity. Both also increase overall production. Trading internationally increases specialization and lowers the cost of production further than is achieved by local trade alone, and in doing so it improves the average welfare of the citizens of all nations that trade. In other words, like domestic trade, international trade is a “positive-sum game” (Hill 2004). The economic theory that explains this positive outcome is Ricardo’s (1817), developed by Heckscher (1991) and Ohlin (1991); and it is solidly embedded in economic thought to this day. However, a minority view, notably that of the anti-globalisation movement is unconvinced of the

economic advantages of international trade. To accomplish this it primarily uses political thought and discourse rather than economic rationales to argue its position. This group is taking an economic position very like that of the mercantilist position of the 18th and 19th centuries, that trade is a “zero-sum game”: that is, in any trade one nation will “win” and another will “lose”.

The political arguments of groups that oppose trade have political and economic consequences. In particular they promote trade and protection policies that generally have popular benefits to special interests, but that come at a cost. The cost is borne by consumers in importing countries and by workers in exporting countries. When trade protection policies are reciprocated by the countries that are harmed by them, the costs are mirrored back and thus duplicated, harming the consumers in the exporting countries and workers in the importing countries. In opposition to this movement, national policies driven by economic theory that favour free-trade generally result in international agreements such as the General Agreement on Tariffs and Trade (GATT) and regional agreements such as North American Free Trade Agreement (NAFTA) and Asia Pacific Economic Cooperation (APEC). The free-trade position is that trade barriers are a “negative-sum game” that is, a situation in which both countries are worse off by impeding trade than if they had encouraged it.

Trade is measured in the national accounts of each country and also has a close relationship to the value of currencies in each country. The “balance of trade” is the difference between a country’s exports and its imports, and is a component of the country’s “balance of payments.” When imports exceed exports, the country is said to have a “trade deficit”. When exports exceed imports the country has a “trade surplus”. A deficit or surplus is exactly balanced in national accounts by an equal but opposite financial amount; that is, the payment for imports in excess of exports, or the receipt of funds for exports in excess of imports. In this way the balance of payments will always balance.

Supply and demand factors, such as the relative value of imports and exports, also affect each nation’s currency. The perceived relative purchasing power of national currencies influences their value in exchange; that is, their exchange rate with other countries’ currencies. Another influence is the domestic and international supply and demand for holdings in each currency. The financial press use the terms “strong” and “weak” for local currencies. These terms are subjective but essentially refer to a perception of a low

demand or a high demand for a nation's currency. Low or high demand for a currency results in that currency being labelled "weak" or "strong" respectively. Times of weakness in a country's currency are seen to favour exporters, who can more readily sell to international buyers who can afford more of an exporter's products when their own currency buys more of the seller's currency; but such times disadvantage importers who have to pay more for international goods when the local currency buys less of the overseas currency. The reverse also occurs: a strong local currency makes it harder for exporters to sell to international buyers who have to pay more of their own currency to purchase the exporter's goods. In such times importers fare well, as the international buying power of their local currency permits lower priced buying.

Dematerialisation

"Dematerialisation", in the context of international trade and trade finance, means the replacement of paper documentation for control of trade, such as bills of lading and letters of credit, by electronic equivalents. This is an area of practical and academic interest.

Laryea (2001) examines whether documentary credit can be effectively dematerialized, that is, shifted to paperless trade. He points to the primacy of the documentary letter of credit. Laryea argues that while emerging electronic systems of payment will evolve to replace paper-based traditional methods, the methods themselves remain the dominant requirement of those engaging in trade. In particular, the documentary letter of credit is essential because it provides for all parties in a unique way. Any alternative method needs to satisfy the same interests served by the letter of credit. Electronic letters of credit, whatever they may be called in the dematerialised world, will fill an essential place in the set of tools available to traders and financiers.

Hee, Chen & Huang (2003) point out that risks faced by global financial firms and markets are increasing due to rising trading volumes in domestic and cross-border transactions. In the US, the Securities and Exchange Commission reduced the cycle of security transactions from a three day (T+3) to a one day (T+1) settlement to reduce settlement risk and enhance competitiveness. Similar changes have also been implemented in several other developed nations. This change will encourage key players to adopt automated systems such as "Straight Through Processing" (STP) which provides a non-stop flow of information from trade execution to settlement. "Firms that

do not have the capability to complete the transaction cycle effectively will be forced out of the industry.” Hee, Chen & Huang (2003, p. 63). Hee, Chen & Huang present a general model of security trading processes and propose a framework of STP readiness assessment from a global perspective of electronic business. The rising awareness of a “need for speed” combined with the promise of reduced risk for those who adopt new methods, is a force for change in international trade finance.

2.3. Online systems

The practice of international trade and trade finance has now addressed these concerns with electronic methods, online systems and networks to facilitate international trade. These provide what is popularly known as electronic commerce, or e-commerce. We are concerned here with that subset of e-commerce known as Business to Business or B2B e-commerce. As such it is fitting to review the history of this field, with particular attention to its application to international trade and the emergence of theoretical constructs for understanding it.

Electronic Commerce

There are notable difficulties involved in researching electronic commerce. (Clarke 2000) has documented several of these:

- It is a new field of academic study;
- It is changing rapidly;
- Behaviour varies even in apparently similar contexts;
- Media and marketing interest has distorted terminology and facts.

However, for the purposes of this research one common thread is clear: The entire history of e-commerce is dominated by the standardisation of business documents and transactions.

Clarke (1998a) begins his discussion of electronic commerce with the account of the Berlin Airlift of 1948. The amazing feats of logistics accomplished during that exercise were in part accomplished by the standardisation of forms, in particular the forms used for air and road transport for diverse goods from diverse countries in diverse languages. Prior to that time, import and export documentation was diverse in form, language and copy-count. Although not electronic, the standardisation of trade documentation

introduced for the airlift provides a useful starting point for a discussion that culminates in the electronic delivery and processing of international trade documentation.

One might consider the telegraph and the coding invented by Samuel Morse in the 1840s with its dots and dashes (dits and dahs for the radio technology purists) as the first digital data transmission medium. But for the purpose of this investigation it is more useful to look to that point in the development of the electronic computing and data processing industry when standardised business data were exchanged between businesses over data links such as telephone lines using modems. In the 1960s, some industry groups, notably road and rail carriers, began to co-operate on the standardisation of electronic forms for purchasing, transportation, and financial systems. Some of these standards supported only intra-industry trading, while others provided for bills of lading and freight invoices and were useful between trading partners in different industries. Competing standards emerged, and so in 1968 the United States Transportation Data Coordinating Committee (TDCC) was formed to coordinate standardisation on behalf of US commercial entities. The American National Standards Institute's (ANSI, see <http://www.ansi.org/>) Accredited Standards Committee (ASC, see <http://www.x12.org/>) further standardised electronic business document exchange with its X12 standard for Electronic Data Interchange (EDI) in the 1970s. ANSI ASC X12 (or just X12) became the EDI standard worldwide until 1987, when the United Nations Economic Commission for Europe (see: <http://www.unece.org/>) introduced a new standard, United Nations Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT or just EDIFACT;²) to extend the capabilities of EDI and make it more suitable for international trade. EDIFACT is used worldwide, including in North America, but X12 has not been supplanted by EDIFACT and is still a more common EDI standard for use within North America (Leverette 1998). These EDI standards both continue to influence newer standards that are emerging for e-commerce, as will be discussed below.

Although EDI provided for international trade, it suffered from slow adoption, particularly in the ranks of Small and Medium-size Enterprises (SMEs). Substantial research went into identifying the reasons for this slow adoption, including that of: Swatman & Swatman (1992), Saunders & Clark (1992), Scala & McGrath (1993), Bouchard (1993), Wrigley, Wagenaar & Clarke (1994), Iacovou Benbasat & Dexter

² See: <http://www.unece.org/trade/untdid/welcome.htm>

(1995), Arunachalam (1995), Premkumar Ramamuthry & Crum (1997), and Hart & Saunders (1997) among several others. Several reasons for slow adoption were found, including complexity, cost, and ignorance of the availability of systems. UNCTAD sought to determine obstacles to the use of e-alternatives to the status quo in transportation documents. Obstacles they identified are shown in Table 2. Raising awareness of EDI, in particular with the push to business-to-business E-Commerce in

Obstacles to the use of electronic alternatives (more than one answer possible)	Responses (% of respondents)
Infrastructure/market/trading partners not yet ready	51
Legal framework is not yet clear enough or is not adequate	44
Electronic equivalents are not sufficiently secure	25
Technology and/or switch to electronic environment is too costly	12
Confidentiality concerns	10
Other reasons	2

Table 2: The Use of Transport Documents in International Trade (UNCTAD 2003)

the later half of the 1990s, largely reduced ignorance about EDI. Competing systems from several vendors, targeted at customers from large to small, plus a dramatic reduction in the cost of computing and communication hardware, have reduced the cost of EDI technology substantially. But the complexity of EDI remains. There is still a need to use complex tools to map business documents to EDI segments and elements, and to tackle the even bigger job of integrating electronic trading with existing accounting, audit and control systems. Where audit and control are minimal, which is typical in smaller businesses, these have to be introduced before automated trading is commercially safe. The reduction of barriers to adoption has meant that EDI use has grown each year, and continues to grow, but its use for international trade still lags because of the additional complexity of trade documentation and finance and the number of parties involved in trade.

One of the barriers found by the researchers above, but not discussed in the preceding paragraph, is the need to have all parties to a transaction using compatible electronic systems before EDI can work. Internal information systems are coordinated by virtue of being under the control of a single organisation. However, EDI is usually inter-organisational. Coordinating independent commercial entities is considerably harder than internal control. Smith (1990) discusses this in practical terms, showing that trading partners unwilling to adopt EDI can impede a business' attempts to obtain efficiency gains through EDI. Large buyers, and even some large suppliers, can and often do put pressure on their trading partners in any given supply chain to participate in electronic trading. This is examined by Webster (1995) and practical examples are

given by Booker & Fitzgerald (1990). However, such pressure is reduced in the case of international supply because larger partners are less able to exert commercial pressure on smaller foreign partners, who presumably have domestic trading relationships of their own. Differences in law also exacerbate this problem because until countries adopted the UNCITRAL model law on electronic trading in the late 1990s and early 2000s, electronic transactions did not universally enjoy the same legal status as paper documentation. The difficulty of obtaining international co-operation in adopting EDI has meant that the efficiency gains obtained from domestic e-commerce relationships has largely been missed in international trading relationships.

The complexity of dealing with EDI was addressed to some extent by the recent adoption of extensible markup language (XML) methods for business-to-business transactions. Lim & Wen (2002) and Hasselbring & Weigand (2001) examine this phenomenon, including its limitations. Nurmilaakso, Kettunen & Seilonen (2002) provide a case study of a migration from EDI to XML in a pilot system. However, the benefits of XML are primarily offered at a technical level and although they can be enjoyed by software developers and by the software implementation departments of companies that wish to adopt e-commerce for business-to-business relationships the complex issues of integration with existing accounting, audit and control systems remain, even with XML. With standards still coalescing, XML based methods do not yet offer a complete solution to complexity and inter-organisational issues for international trading partners.

The international banking and services industries recognized this problem and, beginning in about 1999, introduced some innovations to deal with these difficulties in international trade. New systems: Bolero, Tradecard, TradeDoc, Identrus, Orbian, are described below, in addition to inter-bank systems CLS and WATCH.

2.4. New systems

In an effort to reduce the cost of dealing with trade transactions, sophisticated systems have emerged in the past five years that can address many of the problems involved and provide more efficient, reduced-cost equivalents to the paper systems developed over hundreds of years. The most significant of these are described here.

Bolero: A major practical implementation of a system to improve electronic trading between international trading partners was the “Bolero Launch Programme” which involved a few market sectors in several countries in early 1999. Bolero, an electronic system produced by a consortium of international banks (SWIFT) and international transportation services companies (the Through Transport Club), allows the core trading document, the Bill of Lading with its attendant legal status as a document of title, to be completely electronic and recognized at law as equal to the equivalent paper document in all major trading nations (see: <http://www.bolero.net/>). Mulligan (1999) comments on the significance of this trial. Bolero has since grown to achieve substantial commercial adoption. Its success has brought a significant part of the international trade process online. Seinemann (2003) quotes a Bolero executive concerning the electronic version of the bill of lading:

As a document that conveys both information and ownership, the bill of lading presents an extraordinary challenge to the electronic world. Bills of lading are participatory documents. They involve not just one but numerous different parties. Banks, shippers, recipients, even insurance companies can all play a role in a bill of lading. A bill of lading is a document of title. It's somewhat unique among documents in that it conveys ownership if you hold it. It has to be accepted by banks, by carriers and by customers.

By dealing with the heart of the problem, multi-party transactions, the Bolero system has made a significant contribution to the adoption of e-commerce for international trade.

Several other online systems were launched in the months that followed Bolero's successful launch. These other systems provided online services to other components of international trade transactions. Some examples follow.

Tradecard: Tradecard is an alliance between Thomas Cook Group, the banking and foreign exchange group, Global Sources, a network of websites for connecting international buyers and sellers, and Tradelink, a joint venture of the Hong Kong government and private sectors that promotes the use and development of electronic commerce in Hong Kong. (Cottrill 2000) describes Trade card as follows:

When a buyer and seller agree to transact, the buyer creates an electronic purchase order. This document specifies the contract terms and conditions, which the seller can approve or negotiate. Once the transaction is established in electronic form with both parties in agreement, the seller formally approves the terms of the purchasing contract. The purchase order is stored electronically in TradeCard's secure and proprietary database, and the data from the purchase order is used to ensure that the information on all the transaction documents is valid and secure. The system automatically generates both an invoice and a packing list, which can be updated by the seller. At this point, if the buyer is in good standing, an assurance of payment is attached to the invoice ensuring that the seller will be paid upon compliance. TradeCard then electronically obtains proof of delivery from a third-party logistics provider. Once there is compliance, TradeCard sends a message to Thomas Cook to electronically debit the buyer's account at its financial institution and electronically credit the seller's account.

TradeCard also offers inspection services, cargo insurance and other value-added trade services (see <http://www.tradecard.com>). The significance of Tradecard is that several related trade documents, which formerly arose from separate sources, are now generated from a central online system, ensuring compatibility between documents. That common origin reduces one of the most significant costs and causes of delay in international trade, mismatched documents, known in the trade as "discrepancies".

TradeDoc: Chase Manhattan implemented an Internet-based Financial EDI system for the Asia Pacific region in Australia in 1998. The following year they introduced TradeDoc, which receives invoice data from exporters over the Internet, or via EDI, and communicates with third parties to letter-of-credit transactions (Journal of Commerce 1999). Like TradeCard, this system generates trade documents with matching entries to avoid discrepancies in the payment phase of the transaction. Unlike TradeCard, TradeDoc generates the documents from invoice data instead of from purchase order data.

Identrus: Identrus provides "identity authentication" using standardised digital public-key methods to assist organisations involved in trade ensure their communications are with known entities such as banks and trading partners, and are protected from external reading or alternation. The service was announced in April 1999. This technical security infrastructure is augmented by a legal infrastructure based on a set of uniform system

rules, contracts and business practices to provide trust and risk management (O'Sullivan 2000). This is essential as transactions move from the ultra-secure SWIFT network to the inherently insecure Internet.

Orbian: Orbian is an online payment service to facilitate payment during lengthy and complex transactions, typical in trade. Orbian is owned by Citibank, SAP AG, a major German software company, and DCE Ltd, a German research and development firm. The service “increases liquidity, reduces the requirement for and the cost of working capital, and improves the efficiency, timing, and certainty of commercial payments” (American Banker 2000). The significance of this service is that it provides online support for trade finance which has typically been paper- and branch-based. It also paves the way to potential securitisation of trade finance, a possibility which is being explored by Orbian (Asset-backed Alert 2001).

CLS and WATCH:

In addition to systems specifically aimed at parts of the trade finance, two international banking systems have recently been introduced to improve the efficiency of international inter-bank payments systems. As the efficiency of the international banking infrastructure has a direct impact on the costs and risks of international trade, these are worth considering.

Continuous Linked Settlements (CLS) is a real-time currency exchange system operated by CLS Group, which consists of holding companies and operational entities CLS Bank and CLS Services. Foreign exchange (FX) transactions involve two parties exchanging one currency for an equal value in another currency. For hundreds of years such exchanges have not been simultaneous: they might occur over days, or in recent years over several hours, as time-zones brought national settlement systems temporarily in line with each other to perform each half of the exchange. At any time there is a risk that a bank which may be party to thousands of FX transactions will become insolvent after receiving the incoming halves of FX but before sending the matching outgoing payments for those transactions. In 1974 Germany's *Bankhaus Herstatt* was closed down due to, and thus propagating, a FX crisis. The unsettled transactions caused a wave of concern through the banking system. This problem has since been known as Herstatt Risk, Settlement Risk, or, when it becomes systemic, “cascading cross-defaults” (Greenspan 1998). The FX market has grown to a daily turnover of about \$USD 2 trillion. CLS was established by 70 of the world's largest financial groups to

provide a system where the two halves of FX transactions would be settled simultaneously to eliminate the substantial cross-default risk involved in such a large turnover (CLS 2004).

Worldwide Automated Transaction Clearing House (WATCH) was designed as an international clearing house for cross-border transactions. The project is currently on hold pending commitment to go ahead by its shareholders. This project is very different to CLS in that it provides for one-way transfers (CLS automatically matches two-way FX transactions). Most countries have several banks and a domestic clearing house to facilitate transfers of funds from payers in one bank to payees in another bank. Often the clearing house service is provided by the country's central bank. There is no international clearing house, so when international payment is needed, a payer's bank must use a chain of corresponding banking relationships to send the money to the payee's bank. Each bank in each country has to establish these corresponding relationships with other banks around the world, one at a time. Each bank in a corresponding relationship opens accounts, known as Nostro (a bank's accounts overseas) and Vostro (overseas banks' accounts at a local bank), and deposits funds in each other's bank.

When a bank needs to make a transfer on behalf of a customer, it receives money from the customer locally and sends instructions for a transfer from its overseas account at the corresponding bank into the account of the payee. The aim of WATCH is to

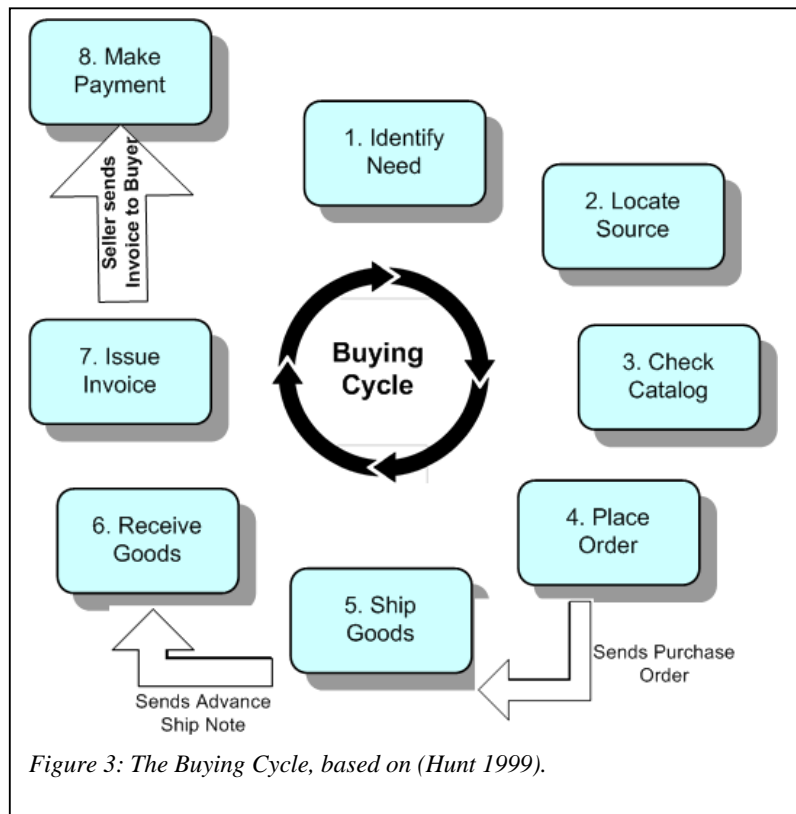


Figure 3: The Buying Cycle, based on (Hunt 1999).

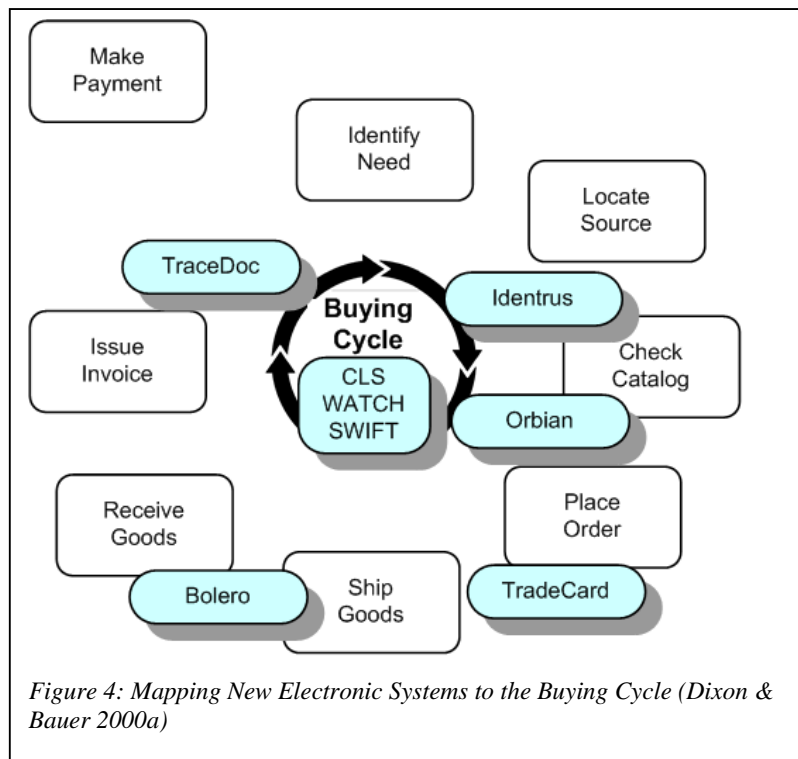
simplify this network of corresponding relationships into a central clearing house arrangement similar to the national automated clearing houses (ACHs) and eliminate the

requirement for each bank to have an account with every other bank they need to do business with (WATCH 2004). The WATCH project is currently on hold, but if and when restarted it will make a significant contribution to automated international banking.

Mapping new systems to the information systems procurement model

Each of these new systems has approached the requirements of international trade differently. Differences can be mapped onto the chain of events that occur between a buyer and a seller to complete a trade transaction. This chain of events has been called by (Hunt 1999) the

“Procurement Cycle” or the “Buying Cycle”, and can be diagrammed as in Figure 3. A buyer begins the buying process at the top of the diagram by identifying requirements that must be purchased. The buyer then works clockwise



through each of the steps shown on the diagram. Some steps involve both buyer and seller; some are actions taken by the seller. Once goods are delivered and payment is made the cycle is complete and either ends or begins again with another purchase.

This diagram can be used to map new electronic systems to those parts of the procurement process they facilitate, as shown in Figure 4.

The Bolero system provides the electronic equivalent of a bill of lading. Other trade document, or message, processes are coordinated around its title registry. The bill of lading is a document issued to the shipper, so this system could be considered seller-

centric. The bill of lading relates to the movement of goods and so is located squarely in the “Ship Order” segment of the cycle.

Orbian focuses on payments, which is a buyer’s perspective: that is, payment is made when goods are safely on their way. This is similar to the traditional documentary letter of credit instrument, where the buyer pays for the network of corresponding banks to ensure that goods are shipped before the seller is paid. Systems with this focus can be located on the procurement model in the “Make Payment” sector of the cycle. However, it could also be located in the “Place Order” box because the product takes the form of a promise to pay, an electronic I.O.U.

TradeCard also focuses on the buyer’s process of issuing a purchase order (PO). Other trade documents are extrapolated from the PO contents. This system fits into the diagram in the “Place Order” phase and specifically on the PO transaction from the buyer to the seller.

TradeDoc focus on the billing for goods shipped. This is a seller’s perspective. The traditional focus document is the invoice. This system coordinates payment, delivery and compliance documentation or messages around the seller’s invoice. On the procurement model these can be located at the beginning of the “Make Payment” sector of the cycle.

Identrus focuses on helping trading partners establish contact, verify identity and agree on contract with signature (non-repudiation) services. These features make the service useful to buyers and sellers in the first two sectors of the procurement cycle. Identrus has also announced some joint venture agreements to extend their services into other products which compete in other sectors of the procurement cycle.

Tentative Predictions about emerging systems

In 2000 this researcher predicted that emerging systems for trade would inevitably cooperate, or even merge, to obtain synergy in providing compatible trade services (Dixon & Bauer 2000a). The essence of the argument presented was that the value added by having related services guaranteed to interact compatibly, plus shared or overlapping ownership among “competing” technologies, would lead to collaboration, co-operation, and then quite likely to mergers to obtain administrative efficiency. Interconnections between these systems have indeed occurred since that time. For example, Bolero began

accepting Identrus certificates at the end of 2000 (M2 Presswire 2000). TradeDoc began working with Bolero in 2003 (Trade Finance 2003).

Electronic Commerce and International Trade

The impact of information and communications technologies on finance and payment is rich. In particular, substantial amounts of work have been done on e-money, for example by (Bank for International Settlement 1996), (Bank for International Settlement 2000), (European Central Bank 1998), and (Abrazhevich 2001)); online share trading is scrutinised by (McAndrews & Stefanadis 2000), (Domowitz 2002)); e-banking and e-finance are the subjects of reports by (Claessens, Glaessner *et al.* 2002), (Allen, McAndrews *et al.* 2002), and (Banks 2001). There has been some investigation into the effect of the Internet or more generally of information and communication technologies on international trade, although much of that work treats the impact on international trade as part of a larger focus, for example on banking or finance.

Misra, Javalgi & Scherer (2004) survey advances in information and communication and technologies that have had an impact on the global economy. They discuss and classify global electronic money and payment systems requirements and characteristics. They also review the impact of electronic money on international trade.

Freund & Weinhold (2004) use time-series and cross-section regressions to suggest that web host growth of 10% correlates to a 0.2% export growth with a 1% annual export growth for the average country examined from 1997 to 1999. The results are consistent with a model suggesting that the Internet reduces market-specific fixed costs of trade.

Laryea (2001) provides a detailed summary of current commercial trade payment practices, with reference to the relevant legislative principles and significant case law. Against that background Laryea addresses four issues: 1. the reason documentary credits are the preferred method of payment; 2. the relevance of the documentary credit in paperless trade; 3. viable alternatives to the documentary credit; and 4. the operability of electronic documentary credits.

Questions of Trust

The initial and early transactions between a buyer and a seller can often be distinguished from later, ongoing, transactions, by recognising a growing trust between the parties. In

practical terms this can be seen when by sellers' insistence on payment by letter of credit, whereas an established working relationship is likely to involve trading on open account. Open account is a smoother, quicker and cheaper way to deal with payment, but only if the buyer can be trusted to pay. An established relationship is more valuable to a buyer and to a seller than the short term cost advantage that could be gained by renegeing on an individual payment. In these trading relationships, the relationship itself has thus built value that reduces risk and costs. There is a substantial literature on the topics of trust, relationship building, and customer relationship management, but it is beyond the scope of this dissertation which is focused on the dematerialisation of trading transactions. Open account transactions are essentially already dematerialised as they are recorded in the accounts of buyers and sellers. It is the traditional instruments such as letters of credit and bills of lading that are currently in transition, and the cost and risk analysis of this transition requires a close examination of the costs and risks of transactions, that is, "transaction cost theory".

2.5. Transaction Cost Theory

Pricing of trade finance services is predominantly driven by risk and costs, mostly transaction costs. A short review of transaction cost theory is therefore in order.

Exponential economic change is being driven by small transaction cost variations caused by the reduction of the importance of distance and the easy sharing of information offered by electronic commerce (Feldman 2000). This section will focus on the impact of transaction costs on economic change, its impact on information systems, and in particular its impact on international trade systems.

Transaction cost theory: a definition

Ronald Coase, considered the father of transaction cost theory (or transaction cost economics), introduced the theory as follows:

"A firm ... [has] a role to play in the economic system if ... transactions [can] be organized within the firm at less cost than if the same transactions were carried out through the market. The limit to the size of the firm ... [is reached] when the costs of organizing additional transactions within the firm [exceed] the costs of carrying out the same transactions through the market." (Coase 1937)).

Since that time Coase and several others have developed the concept and there is now common reference to a “Coase theorem”. This theorem is not tightly defined, as demonstrated by the following two interpretations:

“The Coase Theorem states that no matter who is assigned the property rights, the negotiations will lead to an efficient outcome ... as long as the property rights are defined” (Taylor, Moosa *et al.* 2000).

“The Coase Theorem: when the parties affected by externalities can negotiate costlessly with one another, an efficient outcome results no matter how the law assigns responsibility for damages.” (Frank 1991).

This so called “transaction cost theorem” and various refinements are often defined in mathematical terms, but that is beyond the scope of this survey.

A short history of transaction cost theory

While the original transaction cost view of economics was developed by Ronald Coase (1937), two significant influences on Coase were Arnold Plant (1932), who argued that competition would provide all the coordination needed in an economy; and John R. Commons (1931), who proposed that the transaction be made the basic unit of economic analysis.

Using the work of Coase, the economics of transaction costs was further developed by Klein, Crawford & Alchain (1978), and Williamson (1975), among others. Transaction cost economics has come to mean that the costs associated with the “strategic behaviour” of the human beings representing the firm and the supplier (or the transacting parties) are an important determinant of the organisational form. Williamson (1985) proposes two types of transaction costs: ex-ante transaction costs, which include the costs of drafting, negotiating and safeguarding an agreement; and, ex-post costs, which include the haggling costs, set-up and running costs associated with the governance structures, bonding costs to effect secure commitments, and “maladaptation” costs, should the transaction deviate from the specified terms.

Kulkarni and Heriot (1999) list three transaction parameters that influence transaction costs: asset specificity, uncertainty, and the frequency of transaction. Asset specificity refers to the degree to which “an asset cannot be redeployed to alternative uses and by alternative users without sacrifice of productive value” (1991). In effect, asset

specificity refers to the ease (or lack of ease) with which the human capital (employees), physical assets, and facilities specifically tied to the manufacture of an item can be used by alternative users or put to alternative uses. If a firm possesses unique assets, and it decides to outsource an item, the firm and its supplier would be locked into a situation similar to a bilateral monopoly. Given the “bounded rationality”³ and “opportunistic behaviour”⁴ of the transacting parties, one would expect intense haggling, and a number of contractual problems (Williamson 1985). These would consequently raise the transaction costs. Thus, a firm with specific assets is more likely to organise the activities within its own boundaries, rather than enter into a transaction with a supplier.

According to (Williamson 1985), the frequency of transaction also affects a firm’s decision to outsource an item. Recurring transactions are subject to frequent haggling with suppliers, which increases the costs of writing, monitoring and enforcing a contract. Further, the costs of setting up and running “specialized governance mechanisms” in a firm are easier to recover for large transactions of a recurring kind (Williamson 1985). As a result, increased frequency of transaction is often associated with internalisation of economic activities.

Another significant transaction parameter is uncertainty: specifically, behavioural uncertainty in transaction. The behavioural uncertainty is attributable to the tendency of the transacting parties to behave opportunistically. It arises out of the tendency of transacting parties to deliberately withhold or manipulate important information. Behavioural uncertainty underscores the need of the transacting parties to safeguard the contract to protect themselves. This, in turn, is expected to raise the costs of writing, monitoring, and enforcing a contract. A high level of behavioural uncertainty, therefore, influences a firm to internalise economic activities (Kulkarni & Heriot 1999).

Transaction cost theory and information systems research

According to Varian (2000), information goods such as computer software, journals, books, music and videos can be shared by being copied, resold, or rented. When such sharing occurs, the content producer will generally sell a lower volume at a higher price, which may increase or decrease profits. Profits increase under three circumstances: 1.

³ “Bounded rationality” is a term used by Simon (1957) and others to indicate that participants in a complex system experience practical limits to their formulation and solution of complex problems, a simple example being the difficulty in obtaining some types of information that would inform a more rational choice.

⁴ “Opportunistic behaviour” is the pursuit of goals with calculated dishonesty, or guile.

when the transaction cost of sharing is less than the marginal cost of production; 2. when content is viewed only a few times and transactions costs of sharing are low, and 3. when a sharing market provides a way to segment high-value and low-value users.

Frank Land (2000) offers the case of the first business use of a computer, by J Lyons & Company in England. The case study puts forward transaction cost theory as the basis of the business case in 1949 for using an electronic computer for the company's dealings which consisted of a huge number of transactions of relatively low average value. Reducing the average transaction cost provided a competitive advantage for Lyons.

Transaction cost theory and international trade

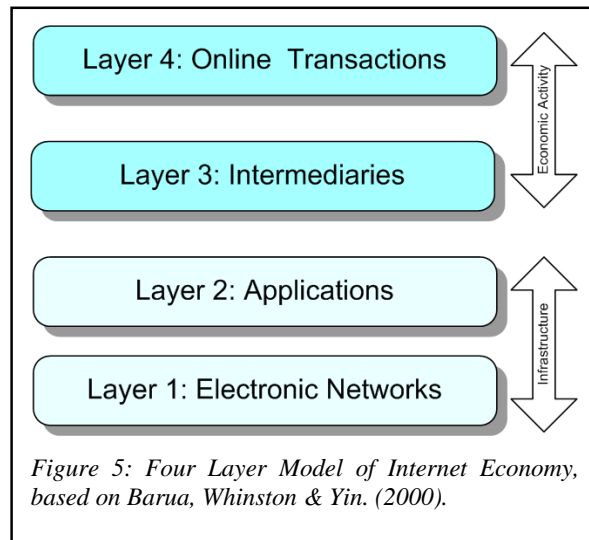
Williamson (1991) argues that asset ownership avoids the monitoring and coordination costs associated with contractual relationships. This is particularly relevant to the relationships between counterparties and their financiers in international trade. That is, partners in contract typically incur costs as they develop, monitor, and enforce agreements with each other. Similarly, search costs for consumers can be reduced when they receive services from a unified organisation because of recognizable homogeneity in products, prices, and quality across operating units (Dranove & Shanley 1995). Organisations sharing trade network systems such as SWIFT, Bolero, or Identrus may achieve homogeneity and thus advantage over more loosely linked organisations, especially when monitoring costs are high and the organisations are geographically separated, as is the case with traditional international trade document processing.

Barua, Whinston & Yin (2000) propose a four layer model for "The Internet Economy" (as shown in Figure 5, below). They contrast the Internet economy to the traditional economy based on the transportation infrastructure, the availability of raw materials, and the quality of a skilled labour force.

This Internet economy model has two infrastructure layers: 1. global high-speed IP-based networks; and 2. applications, consulting, training, and integration services.

That infrastructure and its associated human capital enables economic activity over the Internet. The economic activity takes two forms: 1. transactions involving electronic intermediaries; and 2. direct online transactions between producers and buyers.

Intermediaries are third parties who provide market-maker services, domain expertise, and certification that enable buyers to choose sellers and products. They also provide search, retrieval, and aggregation services that lower online transaction costs. Transaction services for international trade, with value added components such as registries for linking trading partners, overlay each



of the four layers in the Barua, Whinston & Yin model. The services run on both Internet and secure high-speed proprietary networks (such as SWIFTnet); the coordinators of services such as Bolero and others are serving as new intermediaries in the trading process, offering applications to clients such as title registry and message services; these in turn generate online transactions. Participants should expect a flow-on of cost savings on transactions.

The application of transaction cost theory in this thesis

Traditional documentary services offered by banks were necessarily purchased by firms from the financial marketplace. This was partly to deal with the question of trust (trading partners often require a trusted third party to ensure contract compliance) and partly because of the oligarchic control exercised by the banks on these services. The new electronic services are offered through banks (for example TradeDoc), but many are also available for direct access by participating firms (for example Bolero and Identrus). Each firm then has a choice of continuing to outsource the provision of financial services for trade, or bringing them in-house. This “boundary decision” can be analysed with transaction cost economics (see for example Barney (1999)).

Electronic marketplaces and exchanges have attracted serious corporate interest (Reilly 2000). Transaction cost theory can offer insights here. Malone, Yates & Benjamin published significant analysis of this topic as early as 1987, predicting that electronic markets would shift economic activity outward from firms (“hierarchies” as they put it, following the terminology of Williamson) toward market transactions because of the reduced costs of coordination available through information technology. They saw

shifts beginning to occur because of an “electronic communications effect”, an “electronic brokerage effect”, and an “electronic integration effect” (Malone, Yates & Benjamin 1987). Each of these trends continues, and at increasing speed (Feldman 2000).

Gates (1995) and Gellman (1996) claim that the Internet will reduce or even eliminate intermediaries. This is sometimes called the “disintermediation effect”. Bakos analysed the transaction cost effect of electronic marketplaces in 1991, with further commentary in 1998. His key observations are that electronic marketplaces reduce search costs for product information and pricing to buyers, resulting in direct efficiency gains in favour of market transactions mediated electronically. This cost shift alters the buyer/seller power balance. The power balance can also shift through the reduction of switching costs (see Porter (1985). Bakos (1998) convincingly argues against Gates’ (1995) and Gellman’s (1996) claims that the Internet will reduce or even eliminate intermediaries by showing that the economics of transaction costs argue for the creation and flourishing of new intermediaries, electronic marketplaces, on the Internet itself. Disintermediation is likely to occur in cases where intermediaries can no longer add value greater than cost savings available to their customers via their own Internet-assisted efforts, while new, electronic, intermediaries can add value by facilitating electronic markets. These expectations are illustrated by the example of a reduction in bank-issued paper letters of credit at the same time as trade growth is facilitated by the likes of TradeCard and Bolero.

The costs to an organisation participating in trade and utilising trade services, whether the traditional paper-based or the new electronic services, fall into three basic categories:

1. Installation and set-up costs, which include investment in infrastructure and business process re-engineering to prepare for new modes of operation. Installation costs will be referred to below as C_I .
2. Periodic service fees, such as a monthly or annual subscription to one or more of the services (there may be no periodic fees for traditional letter of credit and shipping document services; and similarly, some of the new services may not charge periodic fees). Periodic service fee costs will be referred to below as C_p .

3. Per-transaction fees are a part of the traditional services; for example, a letter of credit may attract a fee of 0.25% of the value of the credit. Transaction fees provide a natural revenue stream for new services. These costs might be proportional to both magnitude (for example dollar value) and volume (number of transactions) so that smaller participants pay less than heavy users of the systems. These two types of transaction fees will be referred to below as C_{TM} and C_{TV} respectively.

The total cost to an organisation is a function of these components. Thus:

$$\text{Cost} = f(C_I, C_P, C_{TM}, C_{TV})$$

Or, alternatively:

$$\text{Cost} = aC_I + bC_P + cC_{TM} + dC_{TV}$$

where coefficients a , b , c and d might be zero (if the cost type is not relevant to the service in question) or positive. For example, coefficient a would be zero if there were no set-up costs. Coefficient b represents the periodic nature of the cost; for example, the annual (twelve month) periodic cost might be $12 \times C_P$. Coefficient c is the unit cost of transactions that are charged by value, and coefficient d is the unit cost where transactions are charged by volume.

An example of this costing structure is the EDI connectivity charges of the AT&T Global Network (an EDI VAN). AT&T pricing in Australia (AT&T 1999) for this service is a one-time charge of \$800 for set-up and administration (C_I), a time-connected charge (C_P) of \$7.50 per hour or \$0.075 per thirty seconds, and a message volume charge (C_{TV}) of \$0.36 for the first 1,000 characters, \$0.17 for each of the next 1000. Using the above formula, cost would be calculated as:

$$\text{Cost} = \$800.00 + \text{hours} \times \$7.50 + \$0.36 + (\text{characters} - 1000) \times \$0.17$$

The cost of installation plus a year involving a morning and evening connection on each working day which lasted an average of 30 seconds and transferred an average 50,000 characters can be calculated:

$$\$800 + (2 \times 5 \times 52) \times (0.075 + 0.36 + (49 \times \$0.17)) = \$5,358.$$

Each potential service will have different pricing on a different sub-set of the costing parameters, but this approach will allow an objective comparison between any set of

competing services over a given timeframe for any given business scenario, all other factors being equal.

When combined with the requirements assessment for any given scenario and the risk factors for the competing approaches, an objective comparison can be made and recommendations put forward.

2.6. Efficient frontier model

Berger, Hancock & Marquardt (1996) call for increased academic attention to the risks and costs in the national and international payment systems because of their “great size, policy importance and economic interest”. They use a risk-cost frontier analysis as a basis for promoting this need. As this type of analysis is used later in this dissertation when discussing observations made in the survey, a short review of the economic concepts is warranted.

Edgeworth (1881) is credited with the invention of the indifference curve which was extensively developed by Pareto (1906). An indifference curve represents combinations of preferences for two

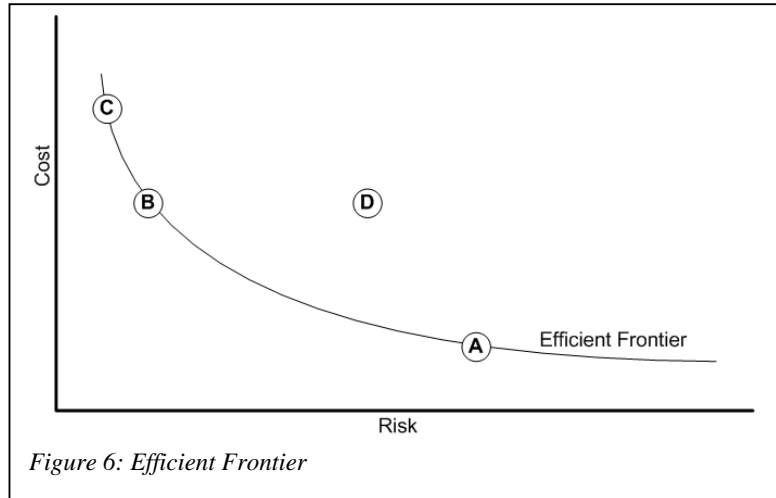


Figure 6: *Efficient Frontier*

goods, services, or other desirable outcomes, where each point on the curve represents a combination of equal preference by a consumer, firm, or other entity.

Following Berger, Hancock & Marquardt’s (1996) reasoning in the context of international trade, an importer wants both low cost and low risk in making a payment for goods. However, reducing the risks involved in payment, for example by paying for a letter of credit instead of making payment to the exporter in advance, has a cost. Reducing the risk increases the cost. Correspondingly, an importer who thinks it is important to reduce cost will probably have to accept the higher risk involved by using one of the more direct payment methods. When plotted as a graph (as shown in Figure 6) a downward sloping convex curve typically results. The convex shape occurs because as consumers have less of one good, they require more of the other good to compensate, as described by the law of diminishing marginal utility. The indifference curve has been used to illustrate preference tradeoffs in any goods one might care to examine. It is possible for the graphs of an indifference curve to be more complex, and even non-

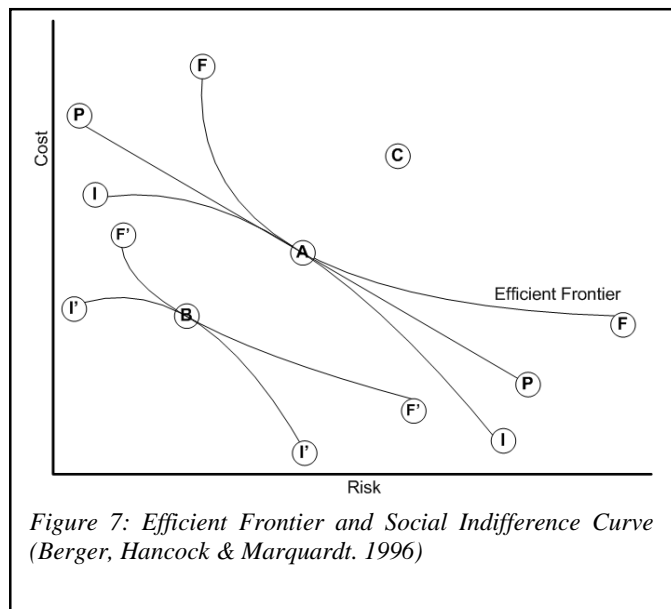
continuous, depending on the utility function involved; but the simple common case shown here serves the purpose of illustrating the concept.

The curve line, often called the efficient frontier, plus those cost-risk coordinates above and to the right of the line, are all possible outcomes in the market for trade finance. Points that are not on the line, such as point D in the figure, are not ideal outcomes because they do not maximize utility for the importer. Point D might represent the cost to the importer of using a financial product from a supplier who charged over the competitive rate available in the market for equivalent risk reduction instruments. Points below the line are not attainable without market re-alignment, because they represent risk-reduction products sold at below the available market rate.

This model can be applied generally when examining trade finance. It can look at payments in general, comparing the relative risk and cost of different payment methods such as payment in advance versus documentary collection versus letter of credit. It can also be used to look at a specific payment instrument, for example to compare various aspects of letter of credit usage such as the use of confirming institutions, negotiable credits, standby credits, and the revocability status of credits.

When the preferences of more than one participant in a market must be examined we can analyse optimisation of these preferences by using another concept from Pareto (1906). A “Pareto-optimal” allocation of resources is achieved when it is not possible to make anyone better off without making someone else worse off.

Berger, Hancock & Marquardt (1996) propose plotting the weighted sum of utilities of all affected parties to create a “social indifference curve” showing the highest level of collective utility (see Figure 7). For trade finance this would include importers, exporters, the banks they use, plus other parties affected by the costs and risks of trade. Plotting such a curve as II alongside the efficient

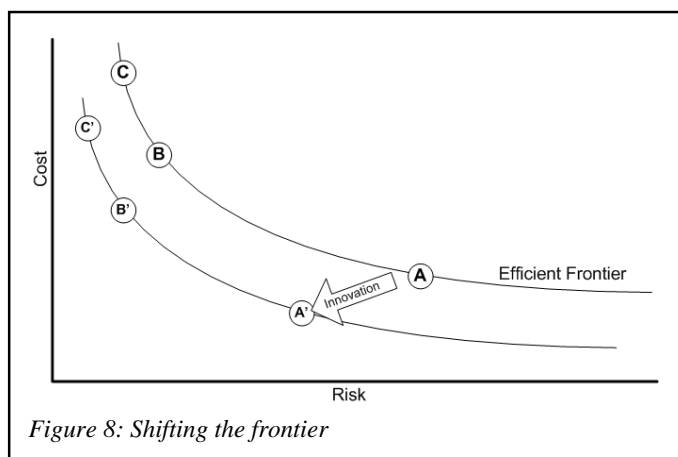


frontier FF already discussed, we can find a point A where the two curves meet at tangent line PP that indicates “best social choice” for risks and costs. This point is Pareto-optimal (although possibly not the only one, depending on the actual shape of the curves in any given case), where the marginal trade off of risks versus costs matches the marginal rate of substitution. This model should be useful for illustrating the effects of innovation. If a process innovation can provide a given level of risk at a lower cost, or a lower cost at no additional risk, then the frontier FF in Figure 7 will be shifted downwards or to the left or both, to the new location F'F'. A new tangent meeting point, B, now matches an indifference curve at I'I' which offers better utility to the parties involved.

Applying the frontier model to trade finance

Any point on the frontier line represents the risk and the cost of a particular activity or transaction. Consider an importer paying an exporter for goods by payment in advance. This transaction is shown on the graph at point A in Figure 8. The cost of funds transfer

is low, but the risk (of non shipment, or non-compliant shipment) is high. The importer could reduce his risk by arranging for a bank to do documentary collection, or to issue a letter of credit. These alternatives both reduce the importer’s risk but also cost more than a simple funds

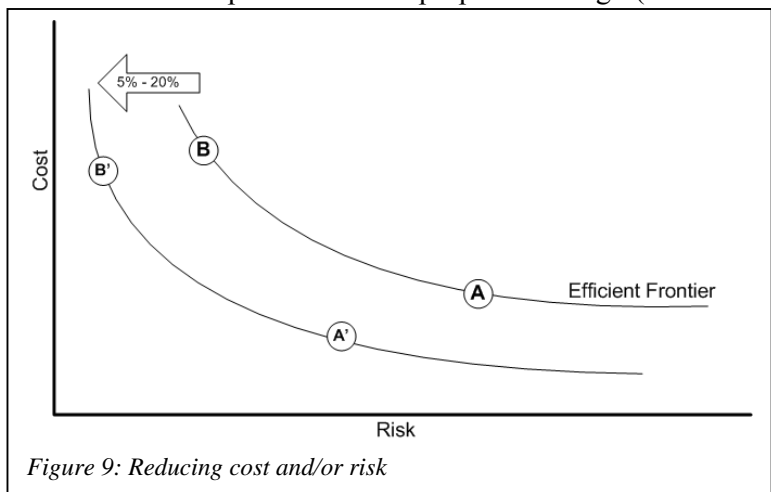


transfer. These alternative points are shown on the graph as points B and C. In a given economic environment, it is not possible to arrange a transaction where both the risk and the cost are reduced at the same time, so it is not possible to map a transaction on the graph below the efficient frontier line. It is possible to set up transactions above the line, by using the services of a more expensive finance provider (which increases cost to the importer) or by using a less reputable and less well-connected finance provider (which increases the risk). However, over time, importers will tend to shop around and find risk and cost positions on or very close to the frontier line.

With the advent of online trade finance tools, the costs of some products reduces as competition recognizes the savings available through client data entry, error reduction through automated straight through processing, and so on; while risk is also reduced by changes such as faster and more secure transactions limiting the opportunities for exchange risk, credit risk and fraud to take place. This systemic change to the economic environment is having the effect of shifting the efficient frontier down and/or to the left so that risk vs. cost trade-off positions not previously possible are now the norm, shown in the diagram as a shift of the curve due to innovation. This effect has been documented in other industries already, and was put forward as an expectation of the effect of online systems on the financial world as early as the 1980s (Malone, Yates & Benjamin 1987). Evans and Wurster (1999) use a similar analytic technique when discussing “reach verses richness” in discussing e-commerce. “Reach” refers to the breadth of the customer base that is accessible, or alternatively the breadth of product range. Richness refers to the depth and detail of information that the business gives customers or collates about customers. Evans and Wurster map these dimensions as terrain for competition.

The diagrams above show cost and risk as axes, but no units are shown. However, for any given cost risk trade-off appropriate values can be assigned. For example, the cost axis for a Letter of Credit might be calibrated in currency (such as Euros or Yen), or a percentage of the nominal amount of the credit. The risk axis could be calibrated in the percentage chance of transaction failure due to credit failure. The usual expectation when dealing with risk is that laying off risk comes at a cost, as shown on the diagram, moving from point A to point B.

But if we determine from observation and experience that a proposed change (such as reduced credit risk due to reduced transaction delays) will reduce risk by, say, 5% to 20%, then the entire frontier is likely to shift left, leaving cost relatively stable, for example moving from point A to



A' or from B to B' as shown in Figure 9.

The hypotheses listed in the following chapter are entirely consistent with this model, which also refers more specifically to risk and cost than the earlier triangle model. Cost and risk had become the central focus of the survey by the end of Round 2, and so this model was presented to survey participants in Round 3 to subject it to critical comment. The outcomes of that critique are described in Chapter 5.

2.7. Conclusion

This chapter has examined the literature on the topics of trade finance, electronic commerce, and the theoretical constructs that will be used later in the thesis to examine the effects of change wrought by the ongoing shift from paper-based to electronic methods of handling and financing trade. The following chapter will address the research questions, hypotheses and aims of the thesis in light of the current level of adoption of electronic commerce in trade and trade finance.

3. CHAPTER 3 – RESEARCH QUESTIONS

The development of technologies and specific products to aid international trade and its finance, along with changes in the legal framework in which to operate, raises the question: what effects will a widespread move from paper-based to electronic methods have on trade finance? In other words, what will de-materialization do to trade, traders, and trade facilitators? To answer these questions we need to know firstly who will be affected, that is, “the players”, and secondly what impacts they will experience.

These questions can be laid out in the form of two hypotheses, which generate further questions and hypotheses as they are examined more closely.

Hypothesis 1:

The following parties will be affected by the dematerialization of international trade documentation and finance:

- large international banks
- small regional banks
- non-bank trade financiers (such as forfeit and factoring businesses)
- importers
- exporters
- carriers and freight forwarders,
- government agencies.

This hypothesis was explored and expanded upon in the first question of the first round of the Delphi survey described in the method chapter (below).

Hypothesis 2:

The dematerialization of international trade documentation and finance will reduce the total cost of doing international trade business.

Hypothesis 3:

The dematerialization of international trade documentation and finance will reduce the total risk involved in doing international trade.

Hypothesis 4:

The dematerialization of international trade documentation and finance will impose minimal additional electronic business infrastructure requirements, to operate in these new ways.

Hypothesis 5:

The reduction in cost and risk, combined with minimal requirements to participate brought about by dematerialization, will attract additional buyers (importers) and sellers (exporters) to international trade, notably among small and medium sized businesses formerly unable to engage in international trade due to the cost, risk and complexity of trade finance arrangements.

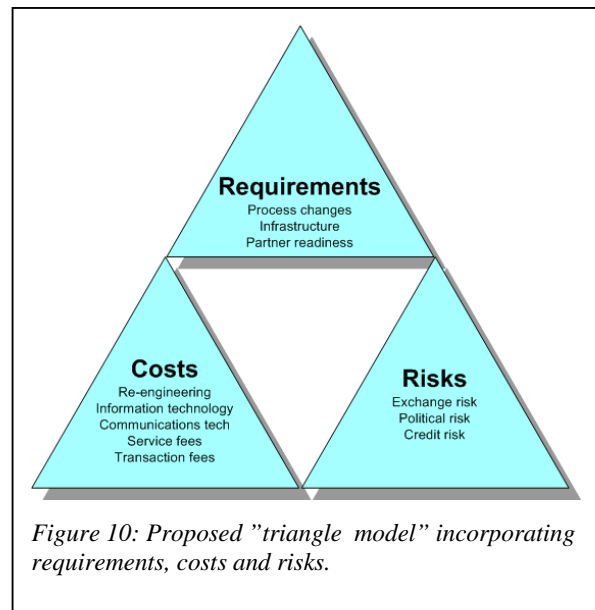
Hypothesis 6:

The reduction in cost and risk, plus the introduction of new importers and exporters to the world of international trade, will increase the volume and value of international trade.

3.1. Triangle model

These hypotheses form the basis of an initial model proposed for discussion in the early stages of the research. That model, called here “the triangle model”, is described below and shown in Figure 10. It was used in the pre-survey discussion with international banking personnel and in the construction of the first round questionnaire.

A high level model was developed for use during initial discussion and literature search. The model identifies costs, risks and requirements incumbent on every participant in international trade. These are initially laid out in a triangle for graphical convenience.



Each existing system involves features, costs and risks, and thus opportunities and threats, to the buyer, the seller, financial intermediaries and other participants in trade such as carriers and government agencies.

Figure 11 and Figure 12 show a development of some of the relationships in a generic trade system. The trade system has requirements, and must deal with costs and risks.

Each of the major components, risk, cost and requirements, are further refined through interpretation of secondary sources and validation and extension in the subsequent Delphi survey.

Examples of the requirements include the necessary infrastructure and changes to existing business processes. For letters of credit, the infrastructure is the domestic branch banking system and its links to national and international banks via correspondent banking relationships. The literature offers

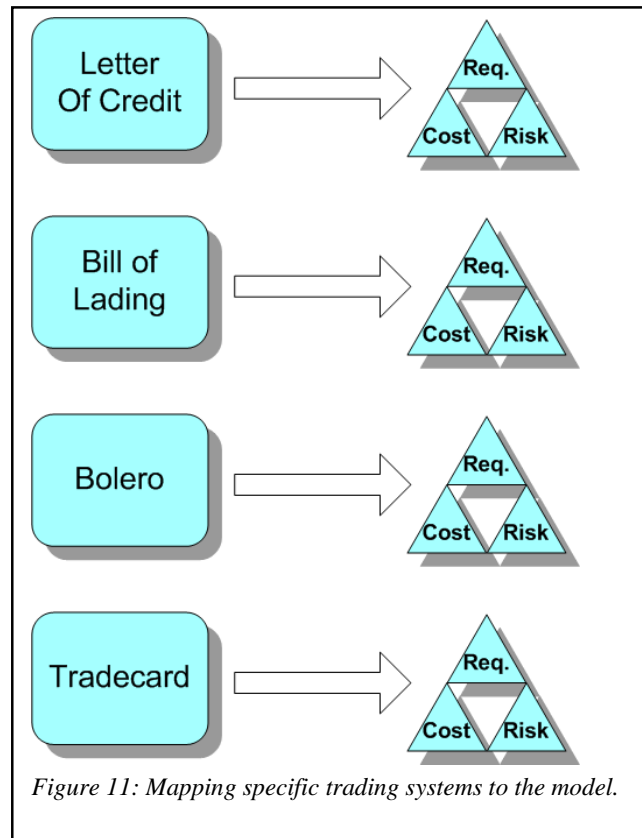


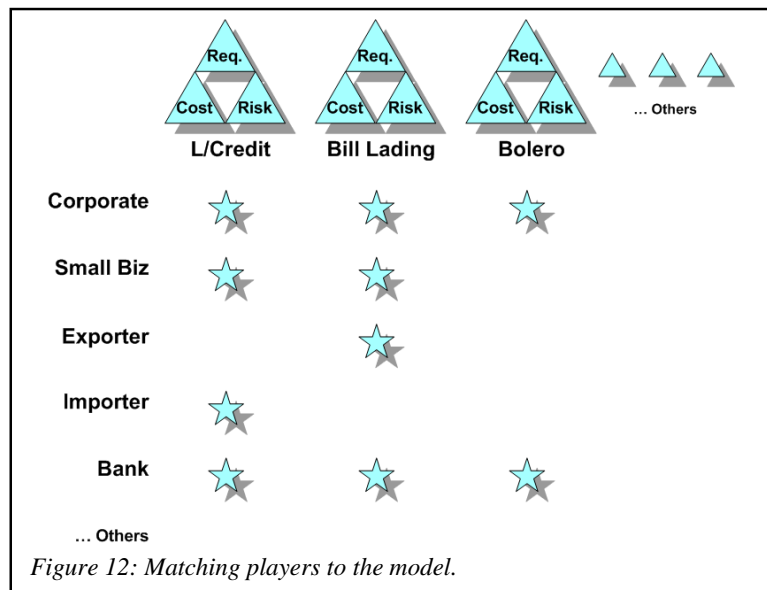
Figure 11: Mapping specific trading systems to the model.

classic examples of risks in various aspects of trade, including Exchange rate risk (Amann & Rommich 1999, Broll & Eckwert 1999a, DiIorio & Faff 1999); Liquidity (Broll & Eckwert 1999b, Carter 1992); Systemic (Ossola 1980); and Herstatt risk (Sawaichiro 1990).

One of the new systems is Bolero Net, an electronic registry of Bills of Lading with a secure extranet to facilitate transfer of title. It is run and supported by SWIFT and went live in September 1999. As with other new systems, Bolero includes requirements such as the alteration of existing business processes to include electronic bill of lading transfer and tracking instead of using paper methods.

Required infrastructure would consist of the Bolero virtual private network itself, plus smart-card reader and software. Costs can be itemized: bank fees for the letter of credit; transaction fees for Bolero and other electronic systems. This system approaches a trade transaction from the point of view of the goods, and the transaction originates from the seller. Other systems focus on ordering or payments; and in some, the transactions originate with the buyer. Risks and requirements are discussed further in Dixon & Glasson (1999), and Dixon (1999, 2000b).

Requirements entries are in practice much more detailed. A complete model would include detail for each line item under Requirements, Costs and Risks. Costs will be



measured in dollar terms, risks in terms of Low, Medium, or High.

For any given system, then, whether traditional or one of the new or proposed systems, one can identify these requirements, costs

and risks. It should be possible to use the same model for each trading system, and in this way a map can be built identifying one of these triangular model entities for each system. A transformation mapping would appear as in Figure 11, which shows a transformation mapping between each system and the proposed model.

Without an objective method of comparing the requirements of a trading scenario against the costs and risks of using the new instruments, against each other and against traditional bank products such as letters of credit and traditional shipping documents such as bills of lading, the exporter, importer, and possibly even the bank are not well equipped make an optimal choice.

Requirements

To better understand potential requirements for small, medium and large enterprises wishing to use newly available online services, or to take part in early tests of newly emerging systems, Bolero.net, TradeCard, Identrus and Orbian were first examined and in some cases contacted. Requirements turned out to be:

- A legal agreement, which must be signed before access to the fully operational online system (rather than just a test system) will be made available to the client organisation. In the case of Bolero this is a sophisticated contract that endeavours to make trade transactions between different legal jurisdictions, and even between users under different legal systems (such as civil, common, Chinese, Islamic or other legal structures) interoperate. This gives transactions legal standing at each end with uniform protection built in for both buyers and sellers.
- A dial-up or DSL modem, in some cases to a secure IP point of presence (such as the ones operated by AT&T or IBM Global Services) rather than to an open Internet Service Provider (ISP); although some services, such as Identrus, do operate over open Internet and rely on encryption software for security.
- Basic communication software that comes packaged with operating systems, such as a dialler program to operate the modem and send files through the modem and over the network connection.
- Special software is needed in some cases to act as an Application Programming Interface (API). An example of this is Bolero. SWIFT is an older example. In these cases the software and specifications are supplied under a non-disclosure agreement and details of how to connect to a test service are provided. Software APIs are used to connect existing software systems that might already be in place to the online service being offered in a more sophisticated way than mere file-transfer (mentioned in the previous point).

On the face of it, none of these requirements are costly; however, where a software API must be programmed to interoperate with an existing software system, large expense can be involved. Generally too, the more complex the existing system is, and the more important audit and control requirements are for a given organisation, the more demanding and costly this requirement will be.

Costs

To gain some perspective on the potential impact that improvements in decision making could have, it is possible to assess the impact of an incremental shift in cost.

Typical fees for a letter of credit for import are 0.325% of the amount of the credit plus a \$10 fixed fee per credit (see for example: National Australia Bank (NAB 2005)). If a new online system can offer a similar service for a fee of 0.2% then on a single transaction of \$1,000,000 the cost saving is \$1,250. However, the importer needs to know more than the difference in cost. A shift from a risk of total loss from 0.01% to a risk of 0.1% may deter the customer, even though the average dollar value of this difference in level of risk over time is lower than the cost saving. Specific contractual requirements might make one system more suitable than another. For instance, a seller driving a particular transaction might find it more attractive to work with a system driven by the seller's invoicing (such as TradeDoc) or shipment processes (such as Bolero) than on a payment driven system such as the traditional letter of credit or a purchase order based system like TradeCard.

Such complexities of trade requirements, costs and risks, in an environment of growing trade and multiple systems emerging to serve it, call for a tool to assist objective comparison for different instruments and for different players (see Figure 12).

3.2. Conclusion

This chapter has laid out the aims and questions addressed in the thesis. The following chapter discusses research methodology and details the approach taken in this research to answer the questions and serve the aims. In particular the methodology explains why the Delphi method chosen is an appropriate approach.

4. CHAPTER 4 – RESEARCH METHOD

4.1. Introduction

This chapter introduces the proposed method for the research, why it was chosen, and how it was applied to the research questions raised in the previous chapter. The chapter also makes observations on the process as it unfolded in this research.

To achieve the aims laid out in chapter 3, a method is required that will distil expert opinion on issues that are complex, new, and evolving. An element of prediction is required. Those involved in the practice of international trade banking, those developing payment and other support systems for trade, and other researchers who are involved in studying and devising new directions and applications of payment systems to trade, provide the pool of expertise that can deal with the questions at hand.

Following the framework of Myers (1997) and Clarke (2000) the landscape of Information Systems and Electronic Commerce methodology was scoured for a sound approach and method. Quality research in this domain is difficult because, as Clarke observed, the field is recent, changing rapidly, shows varying behaviour in similar contexts, and because its terminology is distorted by populist media attention (Clarke (2000). Further, research in e-commerce draws not only on computer science methodologies but also on the methodologies of the business disciplines in which it is applied, such as finance and economics, as is done in this research. While some research in e-commerce is clearly “pure research”, leading to abstract and theoretical understanding, most, including this work, is “instrumentalist”: that is, intended to add to the understanding of the environment and to improve activity within it. Additionally, research may attempt to describe, explain, or even prescribe a phenomenon or activity. Other work, including this research, may attempt to use existing theory to analyse an environment and make predictions intended to aid those working in the environment to plan and execute their tasks more efficiently.

Clarke distinguishes between the main traditions active in e-commerce research, and particularly between the scientific approach, predominantly rational and positivist; the interpretivist approach, which allows for multiple, perspective-based interpretations and which questions the scientific assumption that objective apprehension of truth and facts

is attainable,⁵ and engineering research, which is usually focused on technology, whether its conceptualisation, construction and demonstration, or its application, testing and breaking. The 1980s and 1990s gave rise to substantial controversy between adherents of these traditions (scientific, interpretivist and engineering) to the point in the mid-late 1990s where King & Applegate (1997) declared that “the debate was no longer generating useful information”. Throughout this period there were occasional calls for an open-minded acceptance of a wide range of methods, for example in Galliers and Land (1987) which introduced a taxonomy of research methods; Galliers (1993) which provided an analytical comparison between positivist and “post-positivist” methods highlighting the usefulness of a range of methods and a shift in methods toward the post-positivist (interpretive) for research in management and utilisation of information systems and technology; and Galliers (1995) with a research manifesto.

This research follows the interpretivist tradition. Much of the information needed to predict the impact of technology on a new field is in the minds of the decision makers who will make choices on technology and its adoption, and in the thinking of those who research these areas. This research gathers opinion from panels of these expert practitioners and compares, contrasts, and attempts to make useful observations and predictions from that opinion. Thus an exploratory approach is more appropriate here than a scientific or engineering one.

Having established the tradition in which this work might be evaluated, the choice or research techniques used should be discussed. The data available for understanding and then predicting the direction and impact of e-commerce on international trade finance are primarily the thoughts of experts providing, using, or studying services in the field of trade finance. Thus the data is synthetic, or distant from, repeatable, measurable physical phenomena. As it is mostly qualitative, non-empirical techniques, rather than scientific or engineering techniques, are the most appropriate (Clarke 2000).

The method followed was to survey literature to determine the current main themes and research methods employed in the past, and to conduct exploratory interviews with the head of international banking at a local bank, followed by a Delphi study.

⁵ “The philosophical base of interpretive research is hermeneutics and phenomenology” (Myers 1997 citing Boland 1985).

Other methods were considered, including structured interviews or focus group meetings to identify and discuss issues of importance; case studies of banks, importers and exporters; and questionnaires to a large sample of the international trade community. Questionnaires would have provided valuable information, though without the iterative depth available via a Delphi study. They might also have been a useful fall-back if the responses from the first one or two rounds of the Delphi had not resulted in reasonable consensus, within sub-groups, given the smaller sample size usual in Delphi studies. The other alternatives considered, while appropriate for an issue of local interest, were considered too hard to implement on the globally dispersed sample set needed to examine the impacts of international trade, particularly because it was already clear that regional differences in the practice of international trade are substantial.

The first round of the Delphi presented the issues garnered from the literature survey and exploratory interview and asked for completion of the lists of players, costs, risks and requirements to move from paper-based international trade finance to online systems. In the second round, these lists were ranked and opinion was sought on issues raised. In the third round, anomalies, spreads of opinion, and panel group differences were explored in an attempt to move toward consensus. A proposed model was also vetted. Results of each round of the Delphi were reported to respondents as input to consider in answering the subsequent round of questions. After the third (final) round was reported to respondents, the head of international banking at a local bank, which was a different company and a competitor of the bank interviewed at the beginning, was interviewed to explore the practicality of the outcomes of the survey.

The networking and software infrastructure for some current and newly emerging technologies was also examined, using “test-bed” processes obtained under non-disclosure agreements between the candidate and both SWIFT and Bolero. This process assisted the candidate to become familiar with some of the technicalities of change in infrastructure, but it is not reported in detail here as it is confidential information and not central to the thesis.

The literature was reviewed in the previous chapter of this dissertation. The themes identified in literature, plus those highlighted by the local trade-banking official, provided the starting point for the first round questionnaire described in the section below on the Delphi method and the follow-up interview. The interviewee from the bank also kindly recommended several potential participants for the survey.

4.2. Peer review of the research design

The method, hypotheses and early predictions of outcomes were submitted to critical review via three conferences and a consortium.

- The survey of literature and aims of the research were presented at the local double-blind peer reviewed workshop Western Australian Workshop on Information Systems Research 1999 (Dixon & Glasson 1999a).
- The feedback from that forum was used to refine the material for discussion at International Workshop on Transaction-based Electronic Commerce 1999 (Dixon & Glasson 1999b).
- The triangle model and its proposed application as a starting point for discussion in a Delphi study was presented at Western Australian Workshop on Information Systems Research 2000 (Dixon & Bauer 2000b).
- The hypotheses and some predictions based on the model and the hypotheses were presented at The fifth COLLECTeR Conference on Electronic Commerce 2000 (Dixon & Bauer 2000a).
- A summary paper (Dixon & Bauer 2000c), and a detailed doctoral proposal with theory and methodology were presented at The Eleventh Australasian Conference on Information Systems 2000 and the associated Doctoral Consortium for Information Systems researchers.

Feedback from these, in particular from the doctoral consortium, indicated that the theory and method were appropriate, but suggested that additional case studies, originally proposed as part of the doctoral proposal, should be removed to reduce the scope of work to one more appropriate for a doctoral project. In particular a three round Delphi survey was heartily endorsed.

4.3. The Delphi Method

Linstone & Turoff (1975, p.4) suggest that:

Usually, one or more of the following properties of the application leads to the need for employing Delphi:

The problem does not lend itself to precise analytical techniques but can benefit from subjective judgments on a collective basis

The individuals needed to contribute to the examination of a broad or complex problem ... may represent diverse backgrounds with respect to experience or expertise

More individuals are needed than can effectively interact in a face-to-face exchange, or time and cost make frequent group meetings infeasible

The heterogeneity of the participants must be preserved to assure validity of the results, i.e. the avoidance of domination by quantity or by strength of personality (“bandwagon effect”).

To these, Ziglio adds, “the problem at hand has no monitored history, nor adequate information on its present and future development” (1996, p. 6).

The Delphi Study technique integrates the judgment of a number of experts. It facilitates feedback, debate and comment, in an effort to achieve consensus among a diverse group of participants. Since its inception at Rand Corporation in the 1950s, the Delphi method has “become a widely used tool for measuring and aiding forecasting and decision making in a variety of disciplines.” (Rowe & Wright 1999). Review and critique of the method can be found in Hill & Fowles (1975), Linstone & Turoff (1975), Lock (1987), Parenté & Anderson-Parenté (1987), and Adler & Ziglio (1996). Examples of its use can be found in information systems, as in Chang, Gable *et. al.* (2000) and in Neiderman, Brancheau & Wetherbe (1991), in international business, as in Czinkota & Ronkainen (1997) and in banking technology, as in Prendergast and Marr (1974).

Dalkey (1969), Chapman (1998) and others suggest the Delphi method as a useful method for collecting and analysing expert opinion in Information Systems, Management, and Risk Management studies. Rowe & Wright (1999) even contend that Delphi groups outperform statistical groups and standard interacting groups. Schmidt (1997) suggests that the rigor of the Delphi method may be assisted by non-parametric statistical methods, as Delphi often includes the collection of nominal and ordinal data. Such quantitative methods might assist in determining the strength of consensus or disparity between subgroups (panels) of respondents.

Past studies using Delphi have typically sought input from around thirty experts, based on the finding that larger groups create few additional ideas and limit the in-depth exploration of the ones generated (see for example Delbeq, Van De Ven & Gustafson

(1975) and Czinkota & Ronkainen (1997)). Prendergast & Marr (1974) second Fusfeld and Forster (1971) in claiming that “a Delphi user could feel fairly safe in choosing a group size of ten to twelve” because “after reading about 13 to 15, the average group error decreases very little with each additional member” (p. 100).

Selecting the panels

A useful technique in Delphi is to allocate respondents to sub-categories within the chosen demographic and then compare and contrast the responses from the subgroups. These subgroups are called “panels” in Delphi terminology. Two subgroups of expertise in trade finance are obvious: international trade bankers, and academic researchers of trade finance and banking. These subgroups comprised the first two panels in this study. A third panel was constituted of “others”, those who use trade finance such as importers and exporters, trade associations and organisations of and for trade finance users, government agencies that deal with trade such as customs, and trade services providers such as those that specialize in trade law or software development for trade.

The annual directory *The Trade Finance Handbook*, published by Ark Financial Publishing, London (Ark 1999), provides contacts from the practice of international trade banking and law. Euromoney Plc of London also runs a “Global Address Book” attached to its web-site for *Trade Finance* magazine (Global Address Book 1999). This is a large directory of contact details for people in trade finance banking and related services. The head of international trade banking at a local bank who provided an interview in the exploratory phase of the survey, also provided a list of international trade bankers in Australia and neighbouring countries who might be willing to participate.

The selection of a sample from these sources involved attempting to balance the following:

- Small (regional and local) as well as large (international) trade finance banks.
- Small as well as large importers, exporters, trade groups and service providers.
- Coverage of developed and developing countries.
- Coverage of the major legal jurisdictions (Common Law, Civil Law, Islamic Law, Chinese Law, and so on), as this makes a difference to how trade services are implemented.

Invitations to participate were sent to 440 people in the banking sector of International Trade Finance, 150 academic researchers who write on international trade finance and closely related fields, and 160 other people involved in trade through their management of trade organisations, import/export companies, trade law experts, and government agencies with an interest in international trade. The academic invitations went to members of editorial review boards and contributors to academic publications on trade finance and electronic commerce.

Thirty eight people chose to participate (a response rate of 5%). Five percent is not significantly different to some other Delphis that have reported their response rate to invitations, for example King, Marks & McCoy (2002) reported a 3% response in a Delphi on Knowledge Management. Some Delphi studies have reported much higher response rates. These better responses might have been due to the reputation of the researcher, or possibly due to the researcher using an established network of subjects that had a history of research participation.

For the purpose of this research, the desired demographics were achieved. In particular, the international spread was good, with no specific demographic dominating. There were 7 academic researchers, 18 international bankers, and 13 in the “others” category.

The Delphi method calls for respondents to be anonymous from each other, but not necessarily from the researcher. To facilitate anonymity and data analysis, each participant was allocated a four character “username” for use in the questionnaires and in the discussion forum (see below). The first character of the username was the letter “A”, “B” or “C”, used internally to separate responses from the Academic (A), Banking (B), or “Customers & Other (C)” subgroups. The other three characters of the username were a unique three-digit serial number for internal use in identifying specific respondents. A username was allocated to each respondent, but the internal use coding of the letters and numbers was not divulged by the researcher, and a promise of confidentiality continues to protect the master list of codes. However, it was agreed at the beginning that the names and affiliations of all participants would be provided at the end (without the codes connecting names to comments) except for those who preferred not to be listed. The list of participants appears in Appendix I - Participants.

Rounds of questionnaire

Typical of previous Delphi studies is that three rounds of Delphi are considered sufficient. Some researchers have found that two rounds are adequate for many research questions, but this study adopted a three round approach. It also planned to supplement inter-round discussion via the use of an Internet-based anonymous discussion forum, which is discussed later in this chapter.

The first round of a Delphi study is typically an open-ended questionnaire. This study asked participants to identify the key players, the main costs risks and requirements involved in shifting from paper-based to electronic trade finance, and also to identify “other issues”.

The second round involved asking participants to rank and comment on the outcomes of the first round. This also resulted in more detailed and informed opinion, including their agreement or disagreement with the other panellists in light of the consolidated information.

The third round was used to examine closely areas where there was disagreement between the panellists in round two, and to consider a potential model for better understanding the shifts in costs and risks of change in trade finance processes.

4.4. Infrastructure for survey administration

While three rounds of traditional Delphi usually yield sufficient depth and consensus for the purpose of an area of inquiry, some researchers have observed that postal mail and other paper based collection methods have resulted in slowness or a desire for more depth (Czinkota & Ronkainen 1997; Rotondi & Gustafson (1996). To address this need Internet methods have been found to be effective.

The merger of the Delphi method with computer mediated communications ... opens the possibility for performance of human groups that exceeds the composite performance curve. We have termed this phenomenon “collective intelligence”. (Turoff & Hiltz 1996).

Some Delphi studies performed in the past three years have experimented with using World Wide Web (HTML) forms to collect survey data over the Internet. See for example Addison (2003), Bradley & Stewart (2002), and Holzmüller & Schlüchter

(2002). Akkermans, Bogerd *et al.* (2003) use a more traditional meeting of panels, but then moderate the process via a Group Decision Support System, which also provides electronic capture of opinion, anonymity where needed, and researcher moderation and collation for quick feedback to participants. With a globally dispersed participant list, this research could not have been accomplished with meetings, so the HTML forms approach was a realistic alternative to the traditional posted paper questionnaire method.

Holzmüller and Schlüchter were contacted to ask about the efficacy of using HTML forms over the Internet for Delphi data collection. Schlüchter's response was helpful:

1 Using the Delphi-method with an online medium in our experience is effective and efficient as well. Round about 95% of our participants used the online (Internet) version. The experts appreciated this procedure much more than the conventional pencil and paper version as they told us in the final survey about the delphi survey itself. Nevertheless it was essential that they also had the possibility to answer by paper. We added a pdf version of the questionnaire on the Internet, which could be printed out and we sent out some by mail (round about 3%).

2. Filling in the form by Internet is accepted at all level[s] of hierarchy. The level of hierarchy doesn't play a role about their acceptance. Also the senior managers are already used to the Internet, so that there is no barrier. Round about 60% of our participants were seniors managers on the level of board members or head of a department. (Schlüchter 2002).

This advice was followed: the questionnaire for each of the three rounds was produced on paper and in an HTML form for Internet access. The paper version of the first round questionnaire was mailed out with the invitation to participate. The invitation asked respondents to choose either the paper or the online version, whichever was more convenient for them. An addressed return envelope was enclosed in the package to facilitate return of the paper survey. A paper version of the second round questionnaire was also made available when the report on the first round was posted to respondents. The third round was also made available on paper when the second round report was posted.

Two of the first round respondents (7%) used paper, but in a cover note they each advised that they would normally have used the online version but were responding while travelling and so had used the post. One respondent used paper in the second

round (3%) for similar reasons. All third round responses were via the Internet. This was broadly consistent with the experience reported by Schlüchter.

Several survey support tools were tested for potential use in supporting the Delphi. The survey tools all generated a set of HTML pages that utilized dynamic HTML to collect text, numerical, and Likert-scaled questionnaire data. Output differed little except in cosmetic appearance. MS-FrontPage, the university's standard web-development tool, was also tried and found to be capable of producing similar output to the survey tools but with the advantage of a "look and feel" consistent with the survey's home and information pages.

As an innovation to Delphi, a concurrent electronic discussion forum was offered, to supplement the survey. It was thought that a concurrent threaded discussion would permit some issues identified in the main Delphi to be explored in more depth. Methodologically, the discussion forum could potentially simulate multiple rounds of a Delphi, on more finely grained questions, over a period of a few days instead of several weeks per round as is usual for traditional Delphi.

Three discussion forum tools available at the University of Western Australian (UWA) were tested:

- WebCT – a commercial tool from WebCT, Inc. (<http://www.webct.com/>). This tool is commonly used for its courseware organisation and presentation tools and has features that support discussion;
- Flying Fish server – developed and supported by Nathan Scott, Kevin Judd and Brian Stone of UWA and used in several faculties at UWA to support tutorial problem setting and moderated anonymous discussion;
- PHPBB – an open source (free) software tool specifically designed for threaded discussion.

The researcher tested each of these for at least one semester by supporting discussion of class topics in undergraduate coursework. Each had strengths and weaknesses for coursework support, but the PHPBB board was clearly the easiest and most intuitive tool of the three for online discussion, and was chosen for use in the discussion forum to be run concurrently with the formal Delphi study.

University web services are notorious for relocation and name changes due to administrative change. To reduce the impact such changes would have on the participants, a private domain name was registered. The name <http://trade-doc.com/> was registered, and set to refer web-browsers to the actual web pages on a university server where the research information, questionnaire forms, and the online discussion forum all resided. There are several benefits arising from the registration of an external name:

- A short name makes it easier for participants to type, which should mean fewer typing errors than might occur typing a long internal URL;
- An external name facilitates ongoing communication with participants for future research, after the PhD research is complete and the University resources are re-allocated.

The internal servers and names did indeed change, twice, during the data collection phase, as there were substantial university restructuring exercises during that time; so the use of the fixed external name was helpful. The core pages at the registered domain which were referred to in correspondence with participants still exist:

- <http://trade-doc.com> – the research home page which describes the project, its purpose, value, method, several information links thought useful to participants, and links to the questionnaire pages,
- <http://trade-doc.com/Round1> – the first round questionnaire form,
- <http://trade-doc.com/Round2> – the second round questionnaire form,
- <http://trade-doc.com/Round3> – the third round questionnaire form, and,
- <http://trade-doc.com/Discuss> - the online discussion forum.

Participation Incentives

To assist research participants find the relevant web pages for the questionnaires and the discussion forum, and to maintain attention on these, a hand reference card was created that could be attached to a computer keyboard or monitor. To encourage participants to keep and attach the reference card, a set of Windows “shortcut” keys was summarized and printed on the card to assist the user in accessing software more efficiently. The specific information included on the reference card is shown in Appendix G. It was printed on the front and back of coloured card-stock and distributed with the invitation letters.

Another method employed to maintain focus on the research during the months over which it was conducted was to distribute a newsletter. A “digest” was created of recent trade press and academic articles on the topic of international trade, finance and related fields. The thinking behind this was that many practitioners would not have access to academic writing on trade finance, and many academics would not necessarily review the trade press. This summary was intended as a service to both types of readers, by using the indices available at the university to create brief abstracts of recent developments to show the value in both types of publication. An example of the newsletter, the first one, which was issued at the beginning of Round 2, is reproduced in Appendix G.

No specific feedback was provided by respondents concerning these two innovations; however, the retention of survey participants between the three rounds of the survey was excellent. The keyboard template and the article digest may have contributed to that.

4.5. Initial questionnaire design

The survey of literature and the exploratory interview with a local international banking officer provided a list of the types of people affected by change in international trade processing (the “players”), the key risks and costs involved which might be subject to change as trade infrastructure moves from paper-based to online electronic systems, and what requirements the participants need to prepare for change. Determining what specific issues drive the changes in costs, risks and requirement was also desired.

The identified players were:

- large international banks and small regional banks,
- importers and exporters,
- carriers and freight forwarders,
- government agencies,
- businesses offering online trade finance services (other than banks).

The key costs identified were:

- cost of each payment transaction,
- cost of each carriage document,
- installation costs,
- periodic service charges,

- cost of dealing with irregularities in documentation (such as discrepancies),
- cost of dealing with fraudulent transactions.

The key risks identified were:

- credit risk (buyer default),
- Herstatt risk (settlement risk of the buyer's bank default),
- currency market risk,
- sovereign risk (loss caused by a government),
- operational risk of a new system failing,
- systemic risk to the financial system as a whole.

The first round questionnaire asked respondents to add to, or comment on, these core lists. It asked respondents to identify what is driving each of the changes. It also posed a question:

The questions above ask about changes to risk and cost, and about infrastructure needed to shift from paper-based to online trade finance services. What other changes do you expect to arise from the shift from paper to online? Please consider potential micro- or macro-economic changes such as profitability changes within the banking sector, social or political changes, and any other potential change, even if it is outside the trade and finance sectors.

The full text of the first round questionnaire can be seen in Appendix X, or online at <http://trade-doc.com/Round1>.

The responses compiled from Round 1 were analysed and a printed report was sent to all registered participants with an invitation to participate in Round 2. A printed copy of the questions in Round 2 were provided,, but with a recommendation to use the online form of the questionnaire. The analysis of first round results is discussed in the next chapter.

4.6. Second and third round questionnaire design

Once compiled, the responses to Round 1 provided a more complete list of players, costs, risks, requirements, and what is driving change in those risks costs and requirements. Some diversity of opinion on specific issues emerged. In Round 2, respondents were asked to rate their expectations of change in costs risks and requirements by both direction (increase or decrease) and magnitude. They were also

asked to indicate agreement or disagreement with several statements, and reasons for their response. Finally, as competition was an important issue arising from Round 1, and also an area of exploration with results predicted by Malone, Yates & Benjamin, respondents were asked: “What other competitive effects do you expect to see occur as trade finance moves from paper-based to online methods?” The text of the second round questionnaire can be seen in Appendix Y, or in its online form at <http://trade-doc.com/Round2>.

The compiled responses from Round 2 were analysed and a printed report was sent to all registered participants with an invitation to participate in Round 3. The analysis of second round results is discussed in the next chapter.

The Round 3 questionnaire first asked respondents to comment on those questions from Round 2 that showed a broad spread of opinion. Where opinion was clustered around panel membership: for example, where bankers’ views were fairly consistent with each other’s but not with those of academics’ or the users of trade finance, this was highlighted for comment as well. One of the outcomes of Round 2 analysis was a potential new model for discussing the effect of change in online trade finance. That model, an “efficient frontier model” discussed in the next chapter, was reported to respondents in the Round 2 report, and in Round 3 they were asked several questions about the model. Finally, respondents were asked to comment on some specific issues raised by comments made in Round 2. The text of the third round questionnaire can be seen in Appendix C – Third Round Questionnaire, or in its online form at <http://trade-doc.com/Round3>.

The compiled responses from Round 3 were analysed and a printed report was sent to all respondents with an invitation to complete an “exit survey”. The analysis of third round results is discussed in the next chapter. The exit survey was a request for comment on the process and usefulness of the survey and its reports, plus an invitation to continue contact for the purpose of future research.

With Round 3 complete and reported, a meeting was arranged with the state trade finance manager for a large Australian bank. The objective of this meeting was to discuss the findings from the Delphi survey to obtain a “consistency and relevancy check” from a practitioner’s perspective.

4.7. Process and progress

Literature describing the Delphi method does little to warn potential users of the difficulties in obtaining and coordinating participants. Reasons for omitting warnings on these difficulties in the literature are probably three-fold:

1. The Delphi literature focuses on the process rather than on the logistics of the process.
2. The Delphi method is used in a wide range of fields. Experience with local groups, particularly those within one organisation, would not suffer the extended delays and low-participation rate that occurred in this study.
3. Many Delphi studies are conducted in person at scheduled meetings. Obtaining a commitment from participants to attend a meeting at a given time and place ensures all responses to each round are obtained in an hour or two instead of over two or three months.

The initial hoped-for response rate was ten to twenty respondents in each of the three panel categories out of 300 contacted. When the first set of invitations resulted in insufficient participants, a second and then a third batch of invitations were distributed to potential candidates listed in the source directories, and in the demographics that were underrepresented. The final response rate was five percent, with two panels of the desired size and one just under the desired size. Upon review of several other Delphi surveys published in the recent past it was found that five percent is not surprising. See for example King, Marks & McCoy (2002, p. 95) who received 3% response in a Delphi on Knowledge Management. Some Delphi studies have reported much higher response rates. Perhaps better responses could be obtained depending upon the reputation of the researcher, or possibly due to the researcher using an established network of subjects that had a history of research participation.

Some months after registration, and in fact after the data collection was complete, an Internet advertising company identified the survey registration form as a means of sending unsolicited commercial e-mail, probably by searching for HTML form post tags. This resulted in several unwanted pseudo registrations which contained fake names and advertising material. The form was consequently updated to prevent illicit posting. This incident highlighted the necessity of validating data collected by HTML forms. In this case, all valid registrations were in response to invitations; but a researcher

validating respondents upon receipt of posted forms would need to qualify the responses before trusting them. As every response to the survey was accompanied by a validation code assigned at verified registration and typed in by the respondent, the information was compiled with confidence that it had been submitted by genuine respondents of this survey.

An impediment to this research was the long delay between announcing each round and receiving the responses. For each round, some responses came in within days of the posted announcement, presumably the same day that the respondent received the invitation. Other responses took three months. It was not possible to provide a complete report and follow-up questionnaire until almost all the responses for a given round were in; and so each round stretched to a little over three months' elapsed time.

The method used to deal with delays was as follows, for each round:

- Invitations were mailed out by international courier (for insertion into the domestic postal systems of each participant's country). The time required for delivering these is known, as a good estimate is provided by the courier that handles the mailings.
- A follow-up e-mail was sent to all participants who had not responded a week after the expected delivery date.
- Another week later a fax was sent to each non-respondent.
- A week later still, a phone call was attempted. Most of these phone calls were unsuccessful, getting no answer, or finding the respondent absent or unable to take the call.
- For those non-respondents that were not contactable by phone a follow-up letter was posted.
- About two weeks later the e-mail, fax, phone cycle was repeated.
- Each of these efforts to contact participants yielded a few more responses to the survey. Within three months, the process yielded sufficient responses to analyse results, report to participants and design the next round questionnaire.

These delays were a surprise, and somewhat discouraging. However, a search of the literature for others who had used Delphi showed that some researchers have encountered significant delays in response to geographically dispersed participants. See for example (Bradley & Stewart 2002). The entire data collection phase took a little over ten months.

The follow-up meeting with a local trade finance banker proved both interesting and frustrating. Some of the basics of the classic processes involved in trade finance were discussed and confirmed. However, the bank involved, while large (or perhaps because it is large), does not devolve decision making and forward planning to the state level, so it was not possible in this meeting to obtain comment on the emerging impact of the several online systems that are still in an early adoption phase in Australia. That review will need to occur at a later date at a national level, and is beyond the scope of this research project.

4.8. Survey Method Conclusion

The Delphi method proved to be a productive source of focused ideas, and by the third round, consensus, or a move toward consensus, was achieved on most issues. Several useful ideas emerged and a potentially useful model was given guarded support by the panels. The use of an electronic discussion forum in parallel to the Delphi was mostly disappointing but some ideas emerged from it. A detailed discussion of the results of the methodological approach to the research questions appears in the next chapter.

5. CHAPTER 5 – RESULTS

5.1. Introduction

This chapter presents and discusses the information collected according to the principles of the methodology described in the previous chapter.

The focus of the chapter is the three round Delphi survey. The first round refined the key parameters of interest to the study, as explored in the background and literature survey stages of the research. The second and third rounds collected, collated, fed-back and then regathered refined opinion from the expert panels of participants described in the previous chapter.

This chapter also makes observations on the discussion forum which ran parallel to the survey and on a review interview conducted with the state head of international trade finance for one of the national banks in Australia.

The first round questions were driven by hypotheses (described in Chapter 2 – Literature Survey). Those hypotheses were also consulted during analysis of responses to each round, in the feedback to participants, and in the framing of questions in each successive round.

The following sections describe outcomes from the survey, including the support for hypotheses and the caveats that arose.

5.2. Findings from Round 1

In Round 1, the questions established the parameters to be examined in the following rounds. The working model for discussion was the triangle model (see chapter 2, where that model is introduced) that conjectured an inter-relationship between costs, risks, and requirements which would assist in predicting directions in changes to international trade finance as online systems became the normal mode of operation. For each of these, costs, risks, and requirements, the literature yielded a preliminary list to form a starting point for discussion. The literature also suggested some factors that drive these costs, risks and requirements. Also needed was a complete list of parties involved in trade finance so that discussion did not ignore potentially major players.

The structure of the 1st round questionnaire was: who are the players; what are the costs and what is driving them; what are the risks and what is driving them; what are the requirements and why are they important; and finally, are there other factors driving change that we should consider? The text of the specific questions asked appears in Appendix A, and Appendix D provides a complete list of responses. An overview of findings from Round 1 is provided here, followed by more detailed comment on some of the issues that arose from responses.

Questions 1, 2, and 5 asked about players, costs and risks that had not already been identified by a review of literature concerning international trade finance. The additional items were added to the original lists, and were then reflected in the questions for Round 2. There was some consolidation possible as some responses were very similar.

Questions 3 and 6, about what is driving changes to costs and changes to risks, resulted in the following broad statements concerning cost, risk and other issues:

- Electronic documents, processed straight through to back-end systems, will substantially reduce transaction costs for banks.
- Electronic documents, will reduce staff costs for banks.
- The largest cost in moving from paper to electronic systems will be the cost of re-engineering existing systems.
- The cost of automation will not be expensive because the changes are based on cheap and free Internet technology and open standards (such as XML).
- Automation, with its improved speed, validation, and integration with other systems reduces credit, Herstatt, exchange, and sovereign risk.
- Changing to automated systems increases operational and systemic risk.
- Having documents in electronic form will substantially reduce time delays.
- Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents.
- Electronic authentication and verification will improve security and reduce fraud against banks.
- Changes to law will be substantial but will have a unifying effect: that is, the UNCITRAL model law, the uniform Bolero contract, and the Basel II capital adequacy requirements move national and regional rules for trade and trade finance toward uniformity.

These findings are not surprising because they agree with published industry and academic opinion on the effect on financial services of a shift from paper to electronic methods (see for example IBM (1999)). Some respondents said there was no change. This disagreement with those expecting change might have occurred because of:

1. change being insufficient to make a significant difference,
2. change in risk and cost not being applicable to international trade finance, or
3. other factors working in an opposing direction.

Round 2 was designed in part to clarify which of these, if any, might apply.

Question 9, about other changes that participants expected, revealed several issues concerning competition in the market for trade finance services. The following statements summarise the issues. Again, there was disagreement on some of these.

- Online methods will increase the amount of international trade and the efficiency of the world economy. This is consistent with the expectations of Malone, Yates & Benjamin (1987) which indicate both markets and hierarchies will grow as information technology reduces transaction costs.
- There will be new online services to international trade finance offered in the next few months or years that will both compete with, and complement, existing services. They will mostly come from existing financial service providers. This is consistent with Porter's (1980) Five Forces model for rivalry in a fragmented market.
- As the services mature there will be some merging between complementary and competitive services. This is consistent with Porter's (1980) Five Forces model for consolidation in a mature market.
- Banks will lose trade finance business to specialist service providers, particularly if they do not embrace and offer online services to customers. This is consistent with Porter's (1980) Five Forces model concerning the effect of reduced switching costs in a competitive industry.

Question 8 asked about requirements for a business to use new online services. There was diversity of opinion on whether this would be expensive. It seems that while the equipment may be inexpensive because basic services require only an inexpensive modem and Internet connection, business process changes and training will require a great deal of time, effort and money for some organisations. Complex systems with stringent control and audit requirements will necessarily require stringent controls over new interfaces that move large volumes and values between organisations. Such changes and the preparation for those using the changed systems will likely be expensive due to this complexity and value.

The key players in international trade finance

The first question in the Round 1 survey was designed to determine a complete list of parties involved in international trade finance systems. The list gleaned from the literature proposed as a starting point for discussion included large international banks; small regional banks; importers; exporters; carriers and freight forwarders; government agencies; and the businesses actually offering online trade finance services.

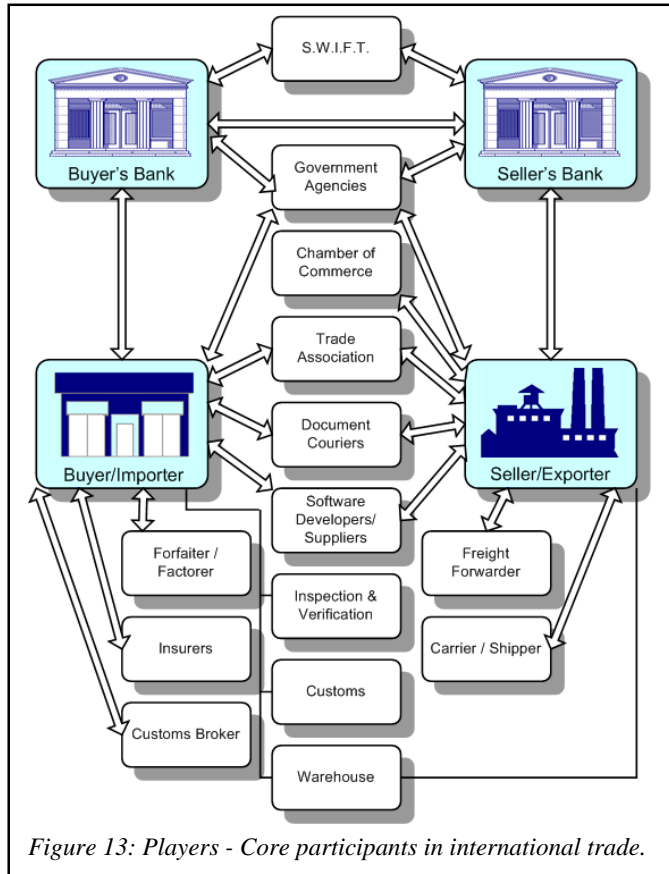


Figure 13: Players - Core participants in international trade.

Additional players suggested by participants included small businesses; SWIFT; chambers of commerce; trade associations; factoring and forfeiting companies, marine insurers, credit insurers; customs departments; customs brokers and warehouse operators; the legal profession; accountants and auditors; bank regulators; document couriers; pre-shipment verification, testing and certification companies; consulting firms; software development firms; and third party logistics providers. The various players and their main relationships are diagrammed in Figure 13.

Changes in methods of handling international trade affect more than might be expected at first glance, but the shortlist generated by this question is supportive of Hypothesis 1 (above) that there is finite list of players. Change in an industry requires adjustment by participants. Shifts in cost and risk are likely to alter competitive positions in banking and other areas of trade.

This clarification of parties involved suggested that in Round 2 it would be necessary to determine if some of these players are substantially more affected than others by change in trade finance methods. For example, are large corporate buyers and sellers affected more than SMEs? Do the changes affect each player in positive ways, or negative ways, and by how much? Round two would also need to distinguish different users when discussing risk, cost and requirements, because these factors are likely to change differently for different users.

Costs that users or suppliers of online trade finance services need to consider

Question 2 of Round 1 sought to validate and complete the list of costs involved in using trade finance systems. The list gleaned from the literature and proposed as a starting point for discussion was: cost of each payment transaction; cost of each carriage document; installation costs; periodic service charges; cost of

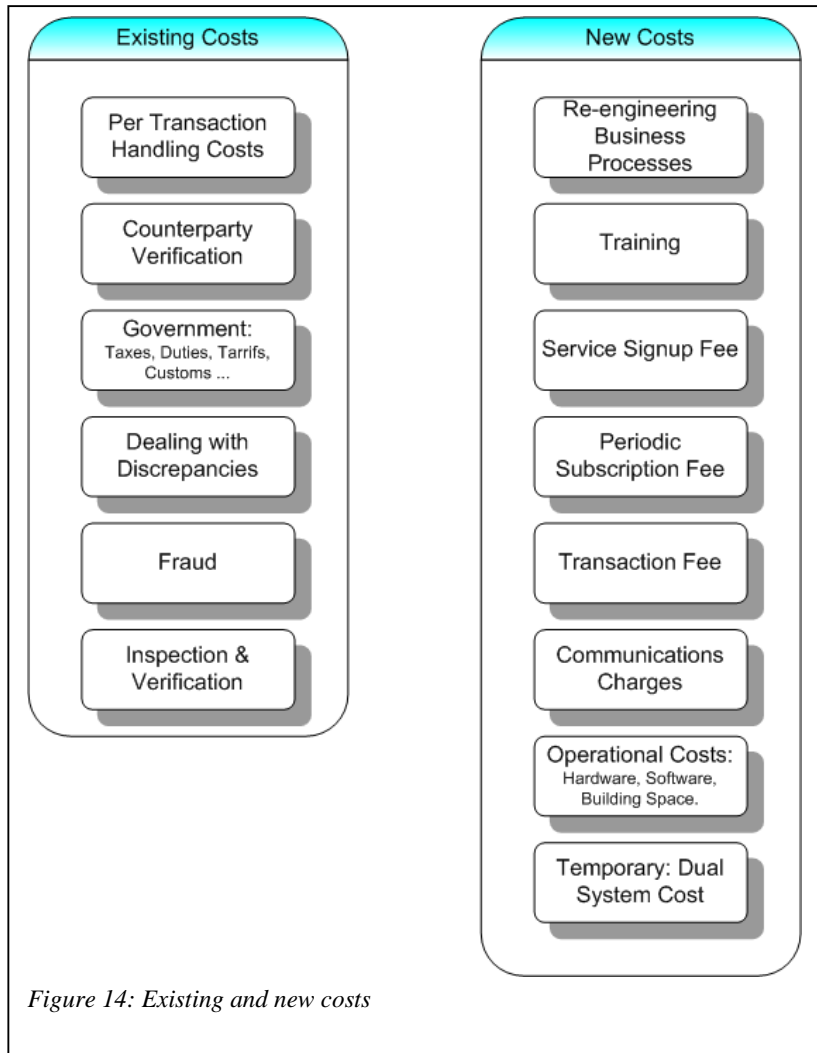


Figure 14: Existing and new costs

dealing with irregularities in documentation (such as discrepancies); and cost of dealing with fraudulent transactions.

Additional costs suggested by participants included costs of verification of counterparty bona fides; costs arising from computer or network problems and downtime; costs arising from government surveillance of transactions with some countries or for some goods; safety and security costs; costs involved in the transfer of property rights on goods; technology investment costs; other documentary costs such as Certificates of Origin or Inspection Certificates; training of staff; new contracts between parties; operational costs; communication costs; various taxes, excise and “duties”; transit interest costs; costs of running dual systems for paper and electronic transactions; annual membership costs to participants to “join/use” systems such as Bolero; and costs of the internal reengineering associated with the new business processes. These are diagrammed in Figure 14.

Planning for a move to online trade finance involves a surprisingly wide range of costs. Some of these may be quite substantial, such as the cost of re-engineering existing systems so that they will accept messages from, and send messages to, systems like Bolero. Training may also be a substantial cost. Figure 14 makes a distinction between the costs that are borne by users of trade finance using existing paper based systems, and the additional costs that must be carried once electronic systems are used. Some of these are transitory, such as the temporary cost of running two systems; or installation, re-engineering of business processes, and training to work with new systems. This information was used to set questions in Round 2 to clarify which costs make the biggest difference to players, and how each existing cost may shift up or down as systems move to online and automatic handling of trade finance. Round 3 of the survey further sought to determine if the total cost to trade finance suppliers and customers would be higher with these additional cost categories, or whether the efficiencies gained by their use would actually reduce total cost.

Drivers of cost change

Question 3 in Round 1 asked for comment on what drives each of the costs already listed, and on the costs proposed by the respondents.

Drivers of changes to payment costs and document costs were identified as automated methods. De-materialisation (moving from paper-evidenced to electronic transactions) enables automated processing which in turn reduces the need for human oversight and intervention. SWIFT, the current infrastructure for most electronic payments, is now challenged by Internet-based methods as the message transport medium of choice. This competition to SWIFT seems likely to drive down payment costs.

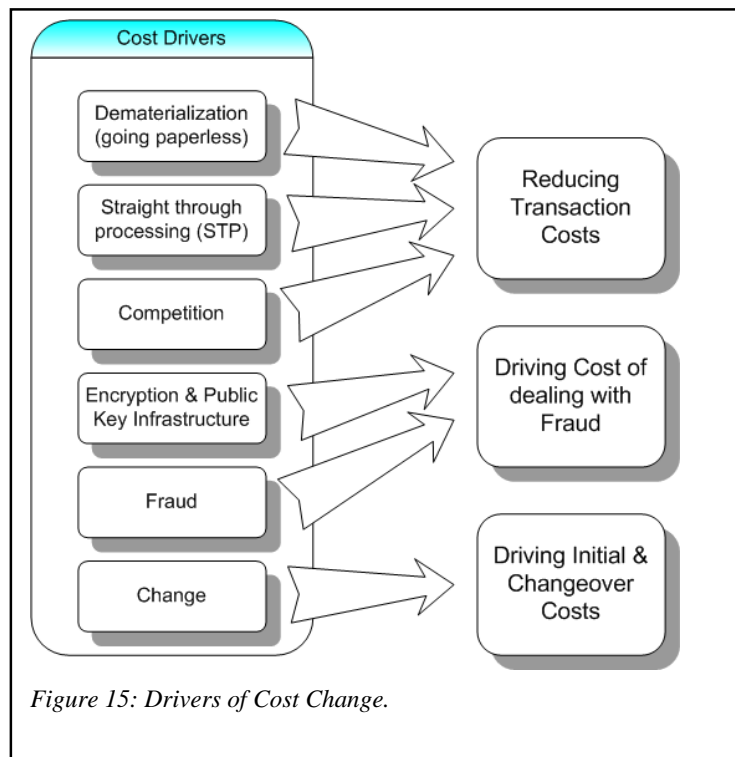


Figure 15: Drivers of Cost Change.

The costs of moving to new systems include installation or implementation costs. Driving these is Internet externally and straight-through processing internally. As one would expect, the consensus here is that installation involves one-time costs, high at first but then minimal. One observation suggested that even this initial cost is mitigated by the fact that implementations are often Internet-based, and so cheaper than older systems to develop. In addition, some advanced techniques such as XML may be easing this transition, and significant existing information technology experience may also be smoothing the way.

Most new systems identified in the literature involved periodic costs such as monthly or annual subscription or membership fees. Periodic charges by banks and other service providers may be a rational way of recouping the amortised cost of new systems implementation. Something not mentioned was competition. Competition between banks and between banks and third party service providers should rationalise the periodic pricing of competing systems.

The literature identifies the costs involved in dealing with discrepancies between documentary credits and documents tendered against those credits as a major cause of

expense, delays, and failed transactions. Checking and communication were identified by several respondents as driving these costs. These factors are important to paper-based processes. Ideally, electronic handling reduces these costs. Is it doing so in reality? There is some scepticism about the ability of automated processes to eliminate checking. So the cost of matching trade documents may remain high. Are the advances in electronic document structuring and matching of sufficient quality to reduce human work? Is their accuracy comparable to human work? If not, will it improve within, say, 3 years?

Fraud is another cost identified in the literature. Concerning drivers of change in dealing with fraud, responses were mixed. Some see secure digital systems, such as Public Key Infrastructure (PKI) and encrypted digital certificates, reducing the instance of fraud; others are sceptical or expect new

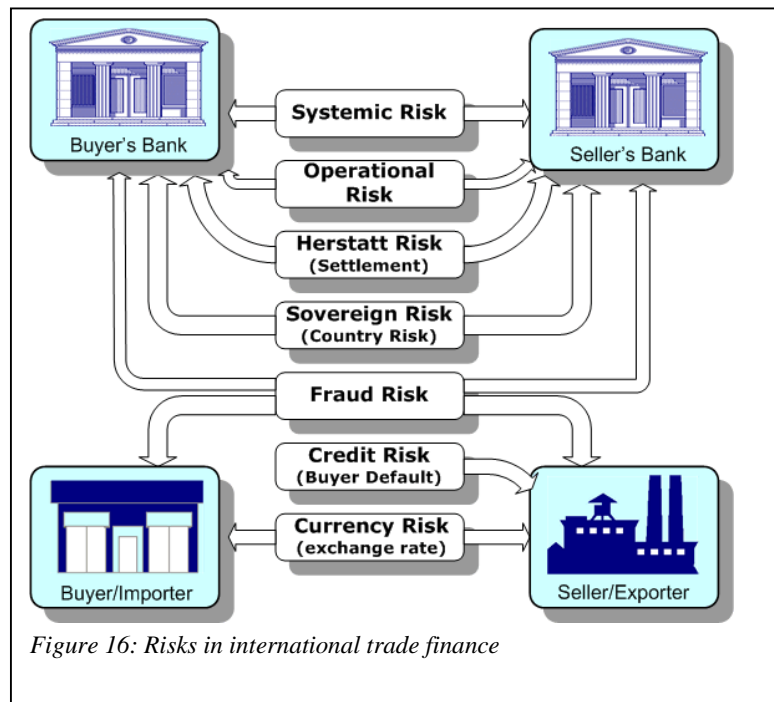


Figure 16: Risks in international trade finance

types of fraud, such as identity theft. On balance, can electronic methods deliver more secure verifiable trade?

Risks that users or suppliers of online trade finance services need to consider

This question sought to validate and complete the list of risks involved in using trade finance systems. The list gleaned from the literature proposed as a starting point for discussion was: credit risk (buyer default); Herstatt risk (settlement risk of the buyer's bank default); currency market risk; sovereign risk (loss caused by a government); operational risk of a new system failing; and systemic risk to the financial system as a whole.

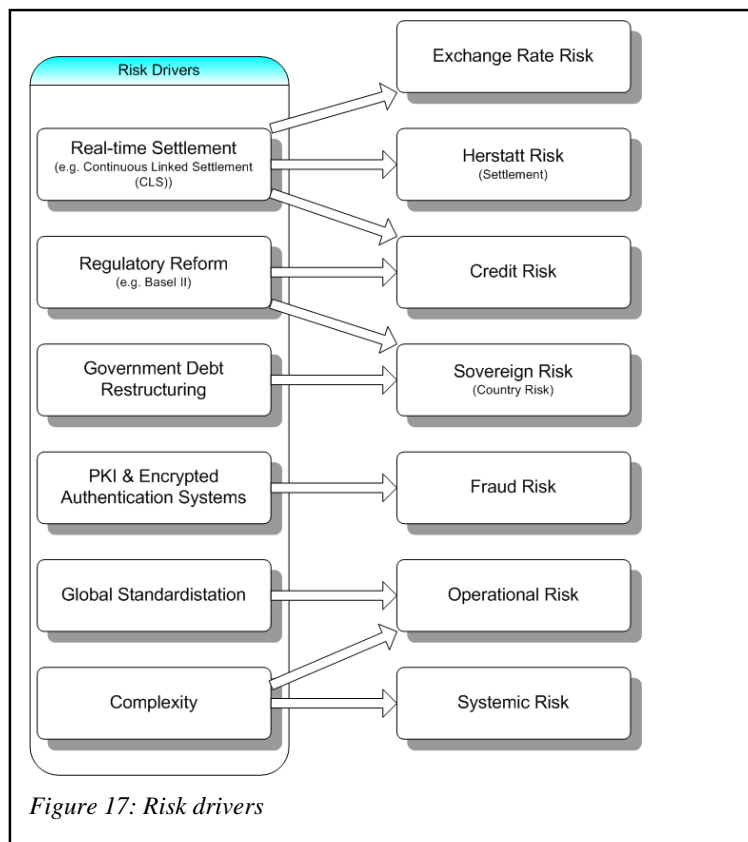
Many of the risks cited by respondents are linked to legal issues. A telling comment was, “the law often lags [behind] current practice leaving us with some uncertainty.”

Change in the legal environment needs to be considered in light of the adoption of the UNCITRAL model law which is being implemented in most trading nations, and in light of contracts that bind trading partners and other parties to recognising electronic transactions, such as Bolero’s contract. Does the UNCITRAL model law sufficiently align the treatment of electronic transactions with traditional paper documents? Has the UNCITRAL law been adopted in sufficient jurisdictions, with sufficient consistency to provide global clarity on the treatment of electronic transactions? If there are gaps, are they sufficiently met by contracts such as the Bolero contract that enjoins all users of Bolero in all jurisdictions to agree to consistent treatment of electronic transactions and registries?

Other questions arise: will some of these risks (for example credit risk and Herstatt risk) actually decline due to transactions being completed quicker, and in some cases simultaneously to the counter-transaction? It will probably be much harder to forge documents when digital certificates and cryptographic methods are used, but do more open access methods, for example Internet-based transactions, open up new avenues for fraud?

Drivers of risk change

This question was posed in multiple parts, each part asking about a particular risk, or about risks proposed by the respondent.



Respondents gave a diversity of opinion about what is driving change to Credit Risk. Two responses indicate electronic systems are not likely to change credit risk (one said “no change”; another cited regulatory reform from Basel II). If “identity theft” increases cost via risk, will that be compensated for by the improved “control via electronic means” and “online verification systems”? Will this risk get worse or better as businesses move online?

What is driving change to Herstatt risk? Real-time settlement, and simultaneous settlement of foreign exchange such as that provided by the new CLS system, will reduce exposure to bank failure by speeding up settlement considerably. Regulatory measures are designed to assist here too. For the purpose of online trade finance, it will be interesting to explore the possibility of the Identrus system improving bank counterparty reliability.

The new Basel II capital adequacy requirements, which were mentioned in the previous question, may also reduce the risk of bank failure. Several critics of Basel II comment on its complexity. Will online methods make dealing with this complexity easier, or will they add to it?

International transactions are exposed to exchange rate risk. Drivers identified included a diminution of risk in intra-day trade; monetary union and alignment of the global economy; delays in payments/mistakes; central bank intervention by the L/C issuing bank branch location does this make sense to you?; and faster settlement meaning less exposure. Analysing the effect of online systems on trade finance will require separating the effects they have from the other important drivers listed here (monetary union, global alignment, and central bank activity).

A rare but large risk is that of default from a government. This is known as “Sovereign Risk”. Responses given on what drives change in sovereign risk included change of government/legal system changes; the impact of sovereign restructuring on trade debt; & L/Cs. These appear to be independent of a shift to online systems, but questions remain. Are the activities of governments in the trade finance sector independent of changes introduced by online systems, or are they interconnected? Analysis of this question will depend on a potential interconnection. Can we make similar assumptions about sovereign risk as those for Herstatt risk, such as, if transactions can be settled

much faster than before, are parties to trade less exposed to adverse government decisions?

The questionnaire asked what is driving change to operational risk. Responses included improved security; clearing houses; real time settlement; mistakes, delays and system failure; the complexity of the Letter of Credit process; technological maturity; and regulatory requirements impacting on capital reserves. Are we seeing a rush to implementation of online methods in an effort to deal with the complexity and delays inherent in traditional L/C handling, and to reduce employee costs? And are we then experiencing the negative results of failure, from inadequately tested systems and employee errors caused by insufficient training?

Systemic risk is similar to operational risk except that it deals with the potential impact that one system failure would have on the entire inter-connected financial system of a country, a trading block, or the global economy. What drives change in systemic risk? Respondents suggested global standardisation and shifts from netting to real-time clearing systems. New systems obviously impose change and thus new risks; but as noted, global standardisation may help a great deal in reducing the complexity of these systems and in particular their interactions with each other. Is there a particular set of standards around which online trade systems are coalescing? For example, are systems that deal with credits mostly using the International Chamber of Commerce (ICC) Uniform Customs & Practice for electronic presentation (eUCP)'s UCP500? Are SWIFT's new XML messages likely to set a standard for other systems?

When asked what is changing other risks that the respondents themselves had identified in the previous question, the following were identified: for fraud risk, verification systems drive change; for transfer risk, systems which tie payment transfer to title transfer reduce risk; for performance risk, automated verification reduces risk.

Requirements: What network, software, training and other infrastructure do you envision being required?

This question probed the third sector of the original triangle model: requirements.

Respondents preferred to comment rather than present a list of items. As with the other questions, all the comments appear in Appendix D – Round 1 Data. A synopsis follows.

Investment in secure software and hardware might be an obstacle for two reasons: cost and availability. US developments are often restricted for export by the US Government.⁶ Some respondents commented that Internet and open systems architecture potentially relieve both these concerns. In either case, however, integration with existing systems is a requirement that will be expensive. Several comments dealt with the need for access and validation. Given that modems, even DSL, smartcard readers and digital certificates, now cost so little, do these impose significant cost? Will they compete with secure networks such as SWIFT and prompt cuts in SWIFT fees?

Outsourcing was proposed as a solution for small to medium sized enterprises. This could create a new competitive market for specialist IT services, or perhaps an extension to the market niche held by today's bureau services. It might take business from banks, but it might also create an opportunity for banks to offer new services for their SME customers.

There was some doubt about the adequacy of a basic modem for electronic transactions. However, given that the minimum modem today communicates at 56kbps, which is approximately the amount of text on one letter-sized (or A4) page per second (a bit more if compressed, a bit less if marked up with XML tags), the electronic trade transactions of an average small to medium sized business will probably not require more than a standard modem. If its load is heavier, an inexpensive DSL connection⁷ could be used to would support all but the most transaction-intensive large corporate business or bank.

One comment pointed out that "large players can't just get a PC and go for it". A big corporation, a bank, or a government agency will probably need to interconnect network systems that communicate between their existing systems and external secure trade and finance systems. In these cases we should be able to assume the players already have mainframe capability with secure networking to deal with existing systems such as SWIFT or Electronic Data Interchange (EDI), and/or electronic lodgement of legislated forms. Additional cost is likely to merely be one of designing and implementing

⁶ Now that the Zimmerman/PGP case has been dropped and cryptographic tools are available both within and outside the United States this limitation would no longer seem to apply. There are systems already in the international public domain (such as Identrus, PGP and Thawte) that are sufficient for most secure financial transactions.

⁷ One local service provider currently quotes a 12 mega-bit per second download, 1 mega-bit per second upload ADSL link at \$AUD50 per month. That quote includes 10 gigabytes of traffic per month in the price (<http://www.iinet.net.au/broadband/>). That connection would support the sending of almost 20 A4 equivalent pages of digital documents per second, and the receipt of more than 200 A4 pages per second.

software interfaces on existing hardware and network equipment. There are software vendors competing to provide this sort of software.

Given these considerations it seems that Hypothesis 4, minimal infrastructure requirements, is supportable.

Other changes expected

The final question on the first round survey was to solicit ideas that may have been overlooked in the literature survey or in preparing the questionnaire. Respondents were asked, “What other changes do you expect to arise from the shift from paper to online?” Responses were varied, and all appear in Appendix D – Round 1 Data.

Comment was made on the need to embrace change or be left behind. The risk of disintermediation (bypassing the banks) and opportunities for re-intermediation (banks introducing new value-added services to help customer deal with trade transactions) will create competitive pressures within the banking industry and between banks and third parties.

The principles of “know your customer” and cost containment persist in the electronic world. Perhaps knowing the customer is even more challenging in the online world with dematerialised documents and “dematerialised” customers, that is, those using services from afar over networks and never seen in person.

Is “know your customer” an even more important principle in the age of automatic, high volume, electronic transactions?

The observation that electronic transactions are very close analogues of paper transactions is valid; but given that electronic transactions make it easy to do “straight through” processing without the retyping and scrutiny of the trained human supervisor, is this merely a “change in the media” or do banks need to transform their entire control and audit processes, and possibly their entire workflow, in the international department?

“The continuing migration of business away from traditional [letters of credit] to open account” was raised. How big is this trend? Is it accelerating? Do electronic services that act like Letters of Credit or provide (electronic) document collection look likely to reverse that trend?

Will the rise of terrorist activity, and the conflicts in Afghanistan, Iraq, and other sensitive regions, make a difference to online methods for international trade? Will online methods help to better deal with these problems and other areas of growing political and economic tension?

As mentioned in the introduction, Reinbach (1997), Clarke (1999), and Field (2003) estimate the cost of handling paperwork at about 6% of the total cost of trade in goods. How much will the expediting of goods movement and reduced transaction costs reduce the total cost of international goods? Could we halve (or better) the 6% figure by moving most trade transactions online?

Round 1 - conclusion

An issue that came up several times in responses to various questions was shifts in competitive forces. Round 2 therefore needed to examine dis-intermediation, re-intermediation, and competitive shifts between banks and third party challengers. There were too many tangents to follow in this area and so Round 2 was developed as a means of clarifying open questions from round 1 and going into more depth on the central questions of round 1, plus the competitive issues which seems sufficiently important to include as focus issues.

5.3. Findings from Round 2

The second round questionnaire was constructed from the ideas that emerged from responses to the first round. This part of the report is an analysis of those results. Here we will review outcomes of the questions.

Several questions received a strong consensus and confirm outcomes suggested in Round 1. These will be examined below, followed by a discussion of questions where opinion was spread, under the heading “contentious issues”.

Issues arising from Round 1

Question 1 asked for Likert-scaled agreement or disagreement with a series of statements concerning ideas that emerged from Round 1.

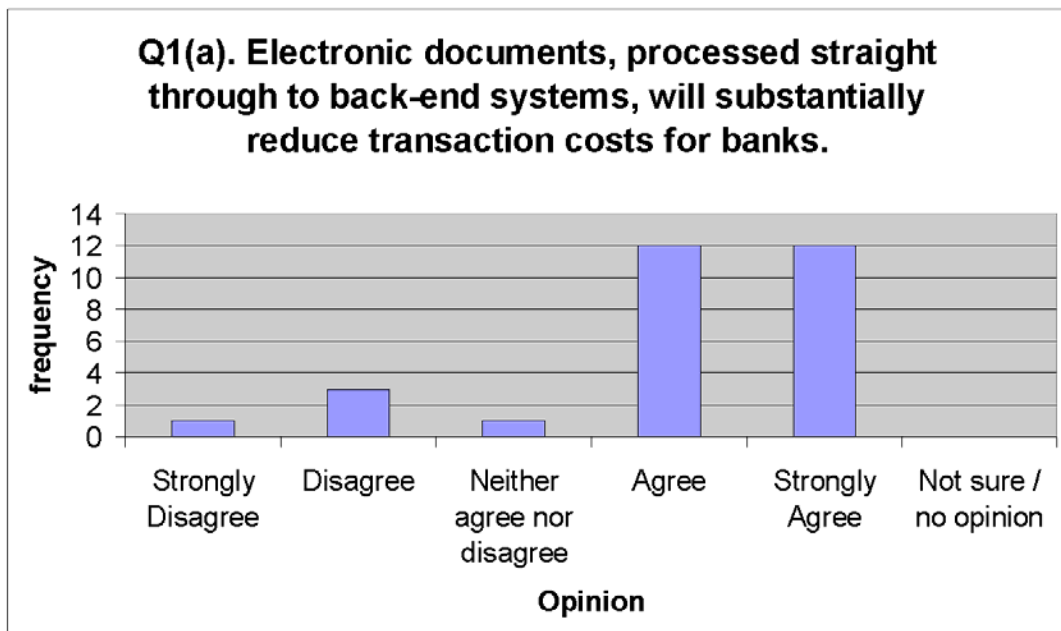


Figure 18: Q1(a) asked for opinion on the statement: “Electronic documents, processed straight through to back-end systems, will substantially reduce transaction costs for banks.”

Most respondents agreed (n=12) or strongly agreed (n=12) to the statement in Q1(a) (see Figure 18). Comments added by those few who disagreed pointed out that initial costs may be high and outweigh potential benefits. The next round sought to determine the extent of cost reduction.

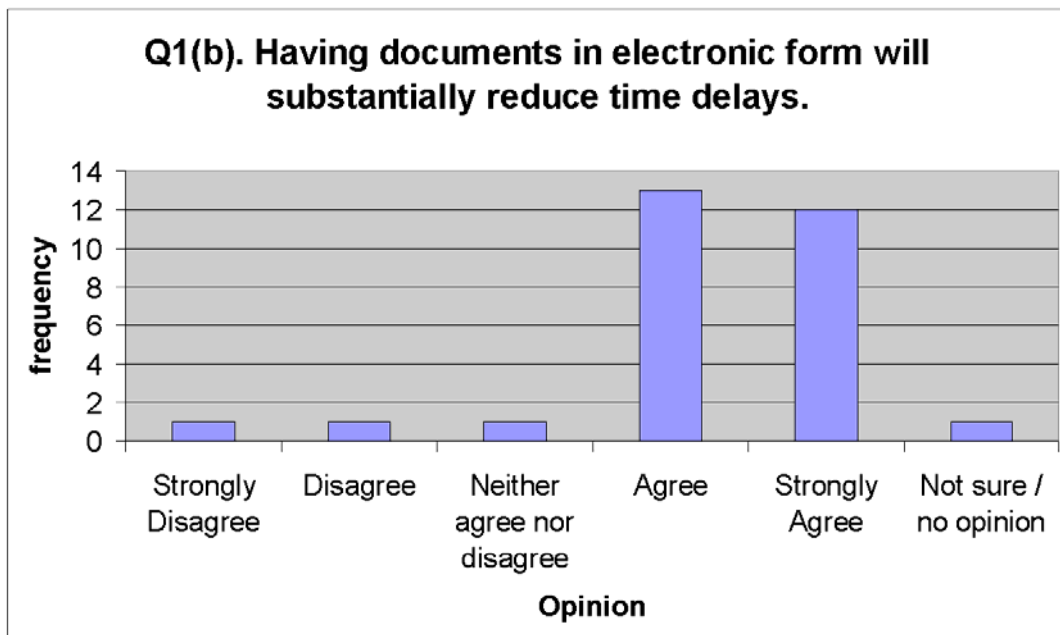


Figure 19: Q1(b) “Having documents in electronic form will substantially reduce time delays.”

Most respondents agreed (n=13), many strongly (n=12) with Question 1(b) (see Figure 19). This seems an intuitive result, but the question sought to identify any unforeseen caveats to time reduction through automation. One comment pointed out that some automation shifts the burden of data entry, part of the time delay, from the bank to the customer.

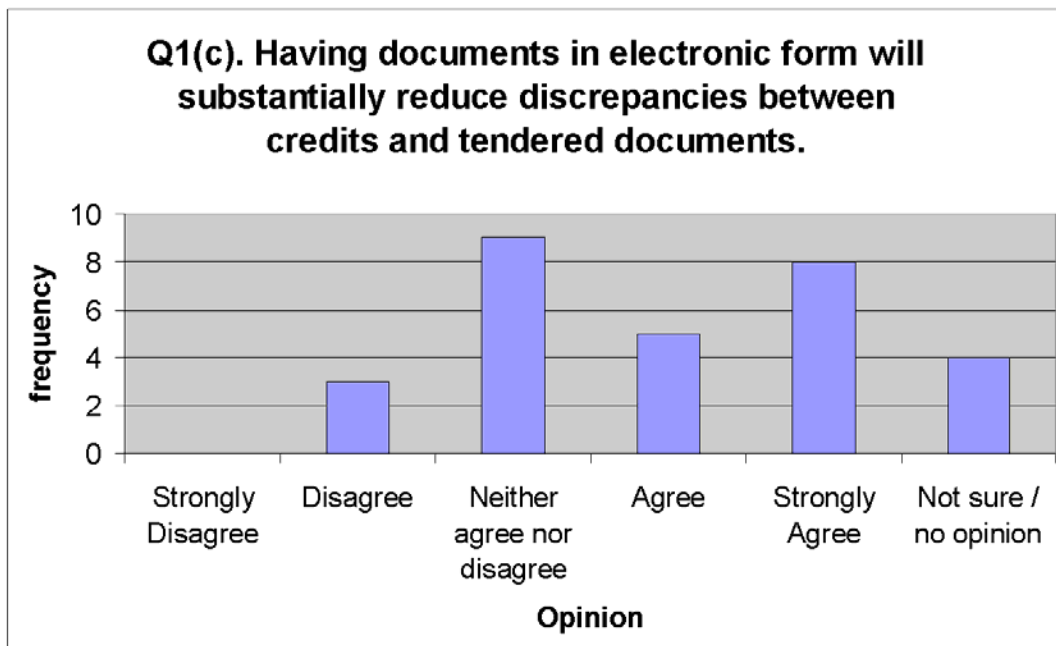


Figure 20: Q1(c) “Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents.”

Question 1(c) resulted in a spread of opinion (see Figure 20). The interquartile range (results between the 25th percentile and the 75th percentile) includes the range from “Neither agree nor disagree” through “Strongly Agree”. Along with other questions that received diverse opinion, this question will be examined in more detail in the next section.

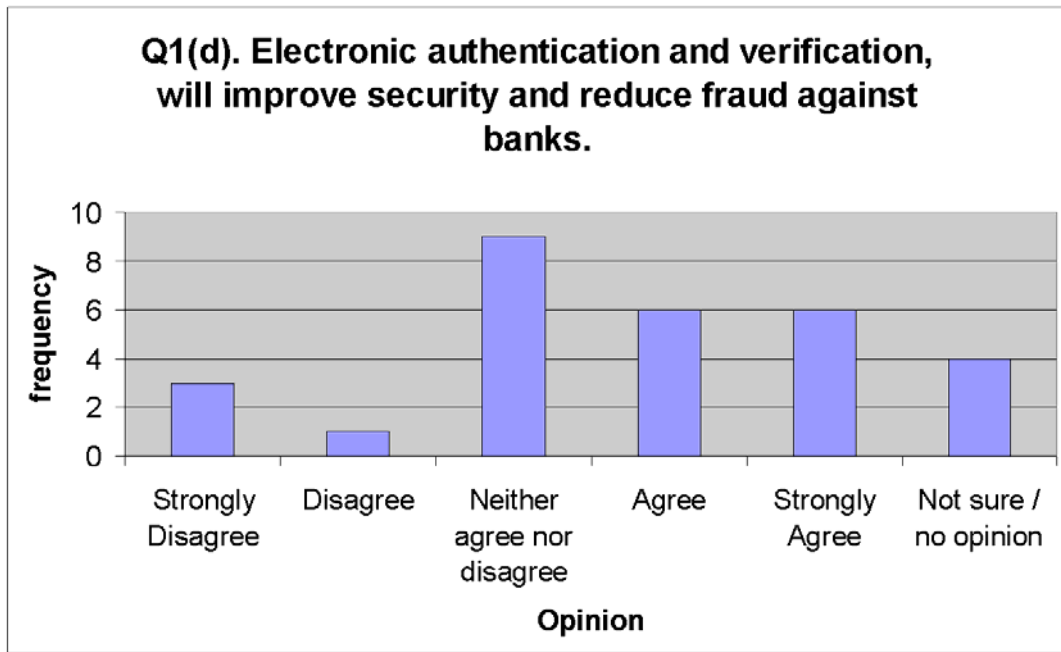


Figure 21: Q1(d) “Electronic authentication and verification will improve security and reduce fraud against banks.”

There was spread opinion on question 1(d) (see Figure 21). However, the interquartile range includes only “Neither Agree nor Disagree” and “Agree”. It is discussed in the next section.

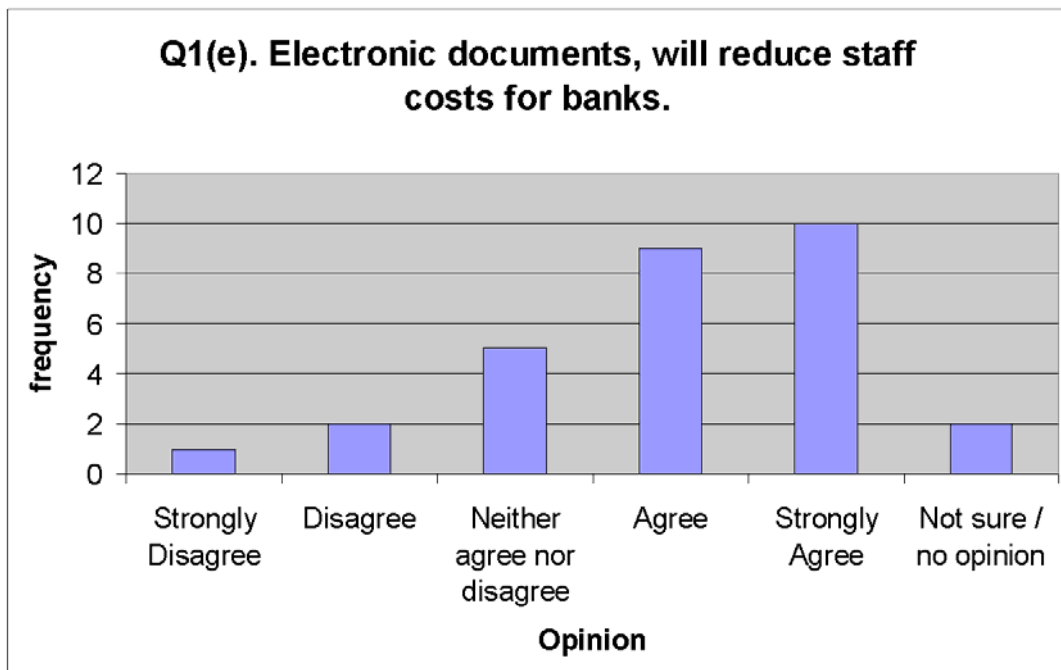


Figure 22: Q1(e) “Electronic documents will reduce staff costs for banks.”

For question 1(e) (Figure 22) most respondents agreed strongly (n=10), with agree (n=9) the next popular choice. “Neither Agree nor Disagree” fell within the Interquartile range. A cost reduction seems intuitive, but respondents disagreeing with the statement questioned the quality of automated checking and straight through processing systems. This concern will be of interest to software developers and vendors as well as to their customers.

Shifts in the costs of trade finance for banks

Question 2 asked about the amount of change expected on various costs identified in Round 1. The questionnaire sought 5-point Likert-scaled responses with an additional choice of “Not Sure/No Opinion”. A “small change” was described as a 5% to 15% increase or decrease, while a “large change” was more than 15%. The context set was for banks and other financial service providers. Question 3 covers the change in costs to users of finance.

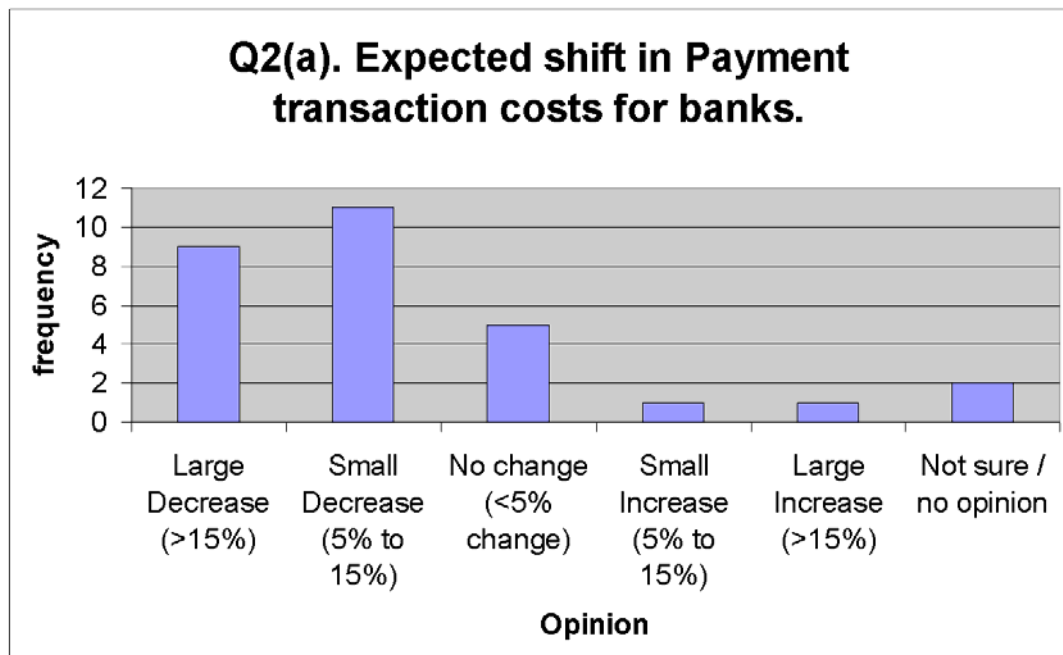


Figure 23: Q2(a) Will “Payment transaction costs” increase or decrease?

For question 2(a) (Figure 23) most responded “Small Decrease” (n=11), with strong opinion also on “Large Decrease “(n=9). This was the expected result, but the question was raised in an effort to identify unforeseen caveats. The size of the shift was investigated in the next round.

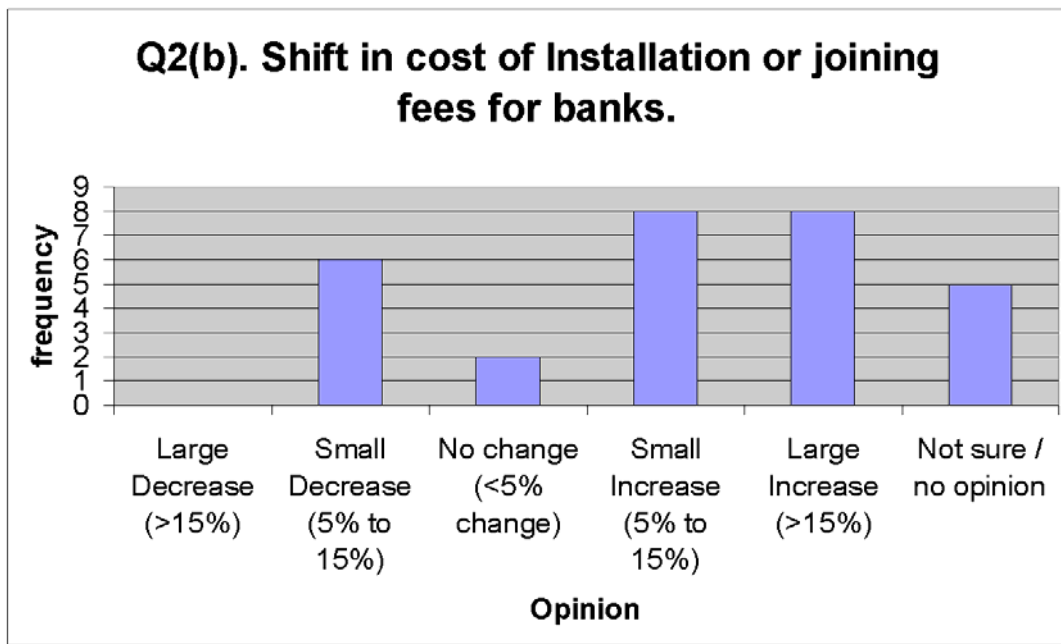


Figure 24: Q2(b) "Installation or joining fees".

Responses were spread on question 2(b) (Figure 24). Please see the discussion on this in the section below, under the heading "Contentious issues".

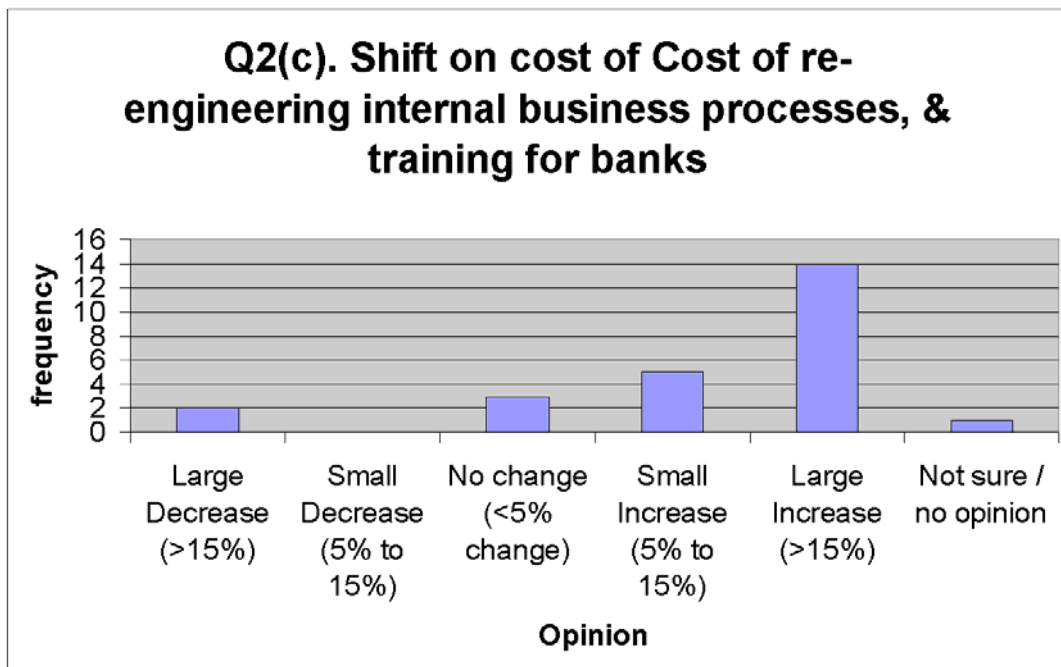


Figure 25: Q2(c) "Cost of re-engineering internal business processes and training".

Most respondents expect a large increase (n=14) in business costs for banks due to re-engineering business processes and training (question 2(c), Figure 25). The larger and more complex existing financial systems are, and the more developed their control and

audit functions, the more customisation is required when interfacing any new automated functions. For large systems this could be a very large one-off cost.

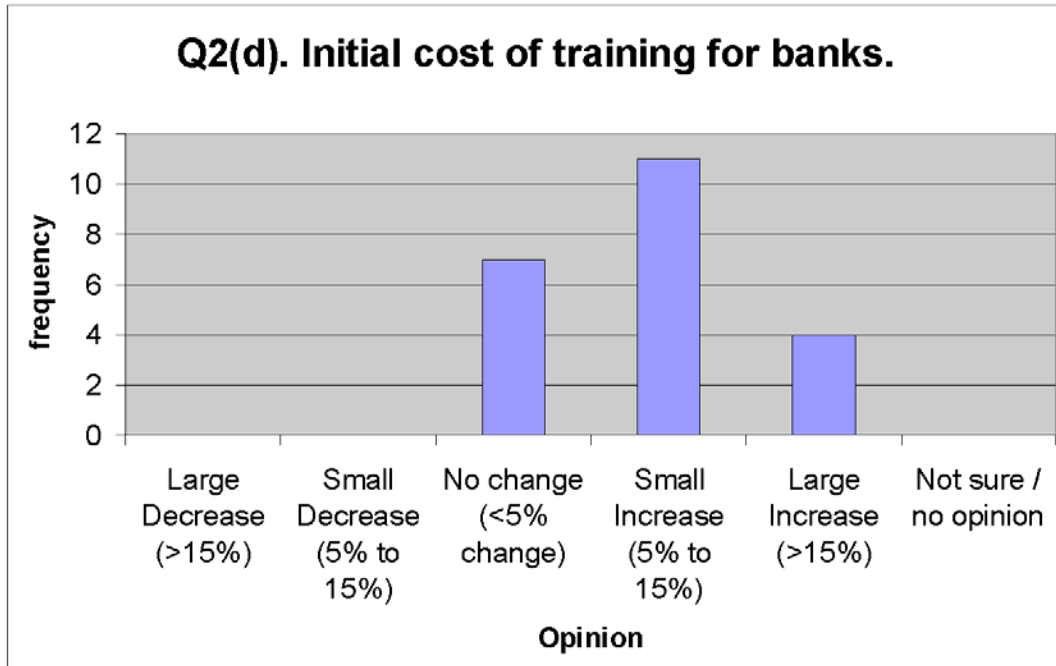


Figure 26: Q2(d) "Initial cost of training".

Responses to question 2(d) (Figure 26) centred around "Small Increase" (n=11) with 7 expecting no change and 4 expecting the change to be larger than 15%. Again, this cost is one borne at the beginning of a conversion project, and is likely to be high for complex systems where change affects many staff.

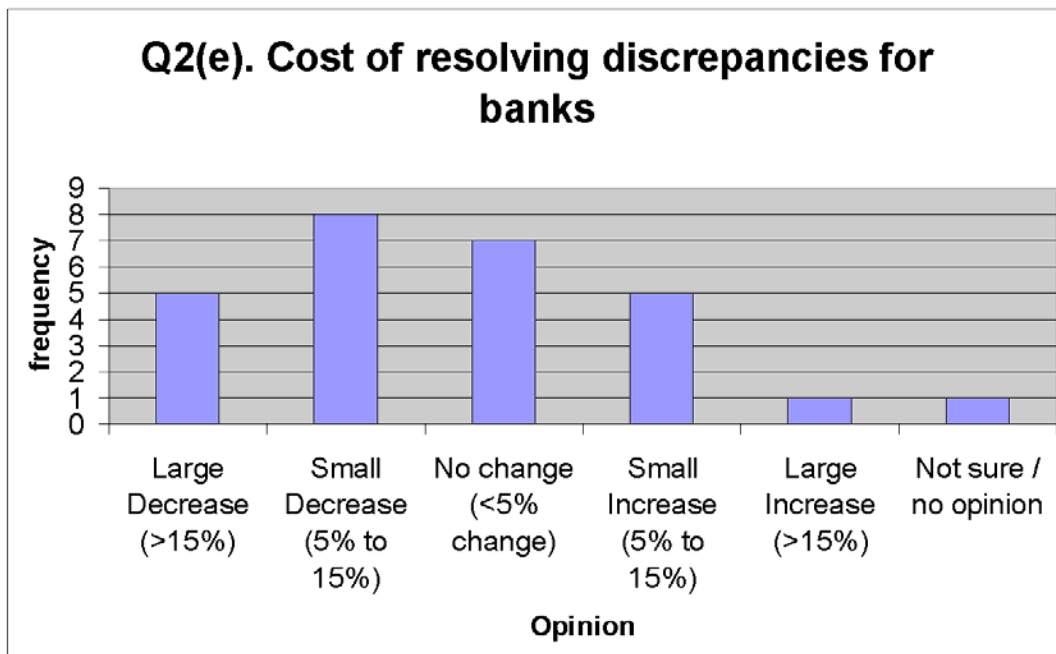


Figure 27: Q2(e) “Cost of resolving discrepancies”.

”Small decrease” (n=8) was the modal response to question 2(e) (Figure 27), but opinion was somewhat spread around this result. Several expected no change (n=7), and a handful expected either a “Large Decrease” (n=5), or a “Small Increase” (n=5). Vendor claims and some predictions in literature suggest automation will improve the resolution rate for documentary discrepancies. However, some respondents are sceptical of improvement in discrepancy handling. This was investigated further in the next round.

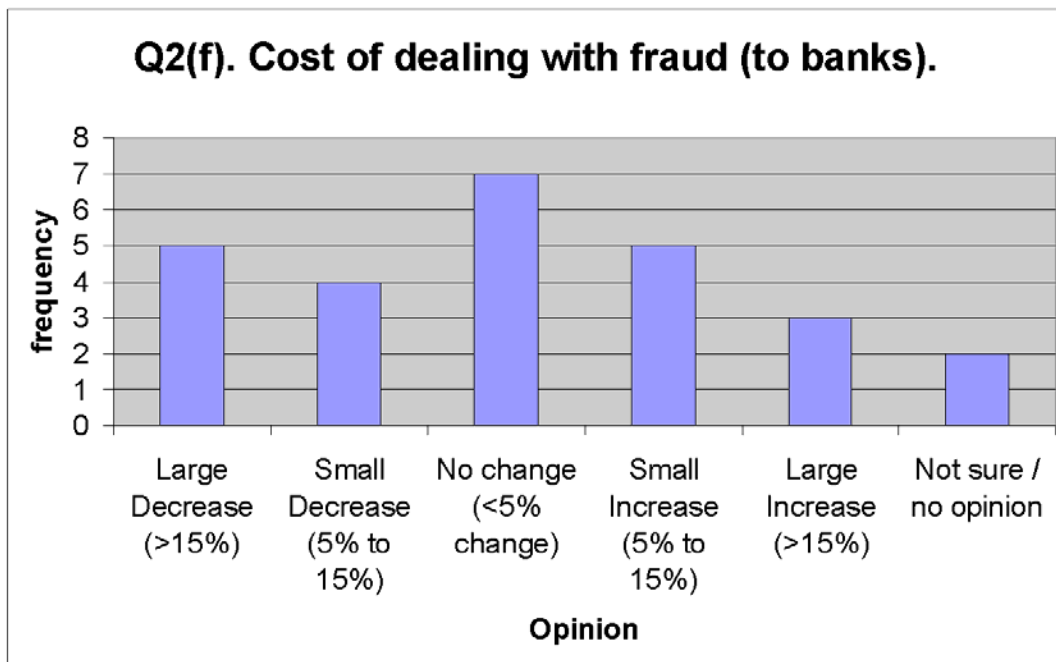


Figure 28: Q2(f) “Cost of dealing with fraud”.

The modal to question 2(f) (Figure 28) response was “No Change” (n=7), but responses were spread. This result was unexpected and so needed investigation in Round 3. This question is also discussed in more depth below under the heading “Contentious issues”.

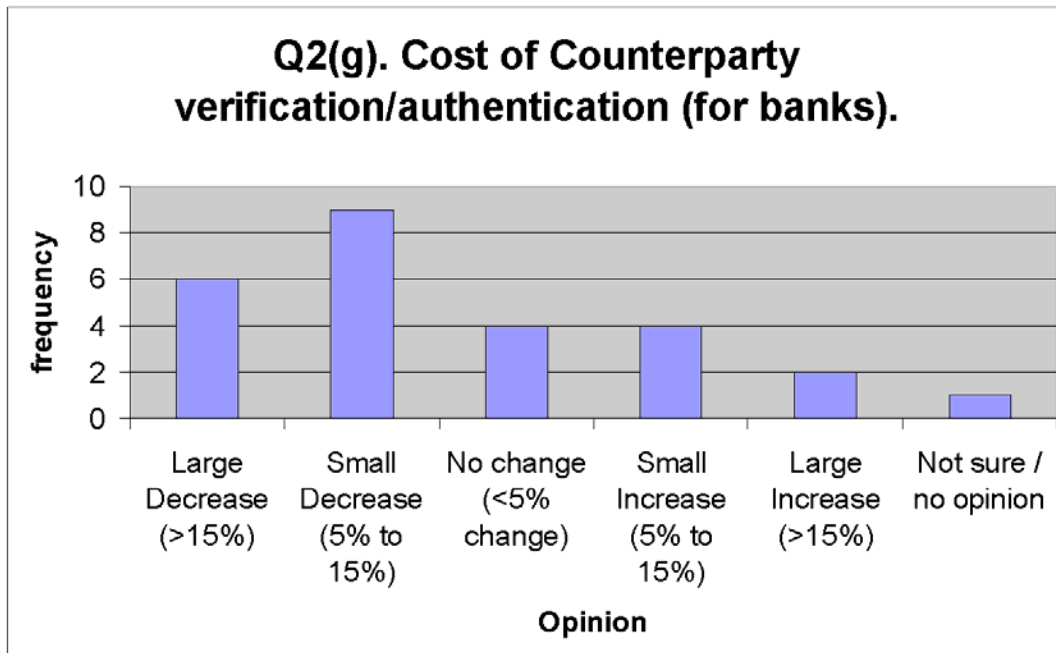


Figure 29: Q2(g) “Counterparty verification/authentication”.

A “Small Decrease” (n=9) is expected for question 2(g) (Figure 29), with several expecting a “Large Decrease” (n=6). This is the expected result, with inexpensive

reliable digital cryptographic authentication becoming the norm for transactions over public networks.

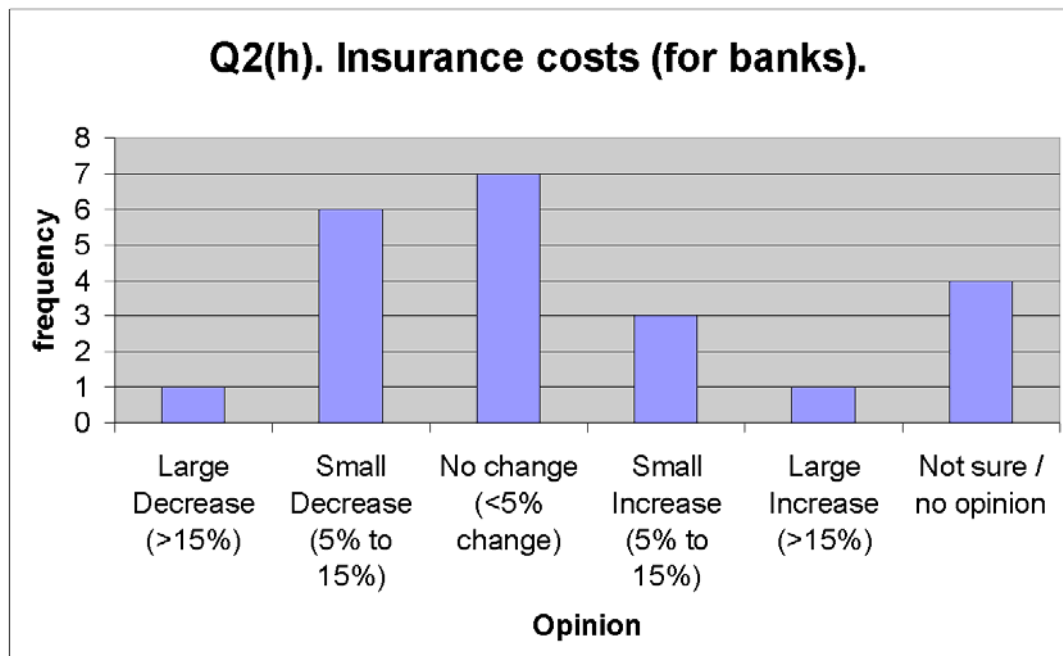


Figure 30: Q2(h) "Insurance costs for banks".

The modal response to question 2(h) (Figure 30) was "No Change" (n=7), with firm support for "Small Decrease" (n=6). This is consistent with the responses for risk reduction (below) as insurance is the cost of off-setting risk. When risk decreases, insurance costs should decrease proportionately.

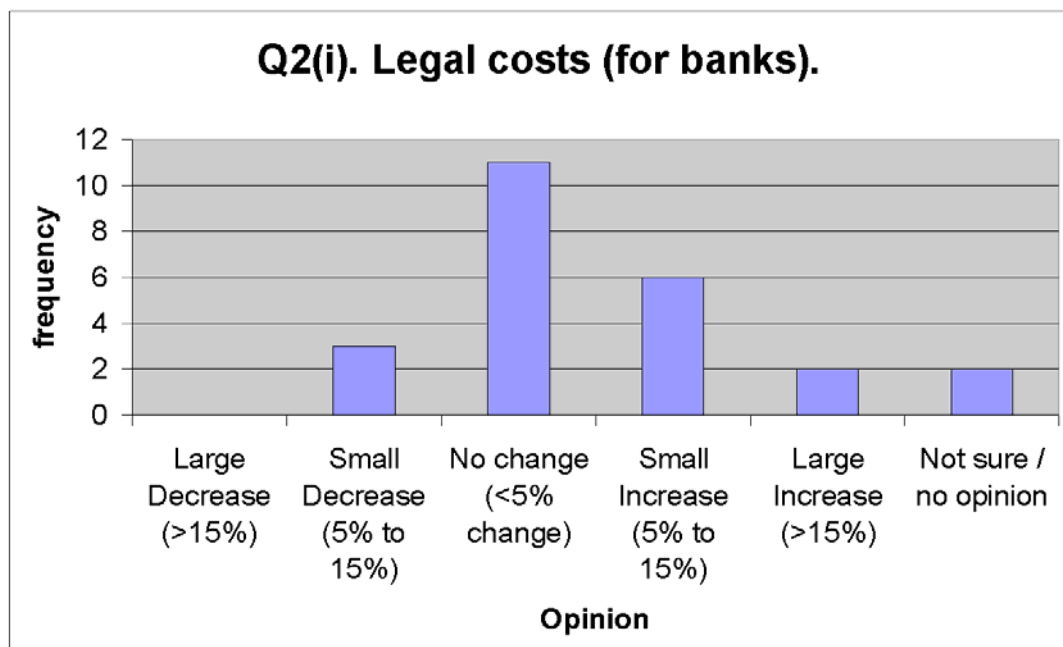


Figure 31: Q2(i) "Legal costs".

"No Change" (n=11) is expected question 2(i) (Figure 31), with some supporting a "Small Increase" (n=6). This result needs further insight to be useful. It was reported to respondents but there was no additional comment on this point from respondents in round 3.

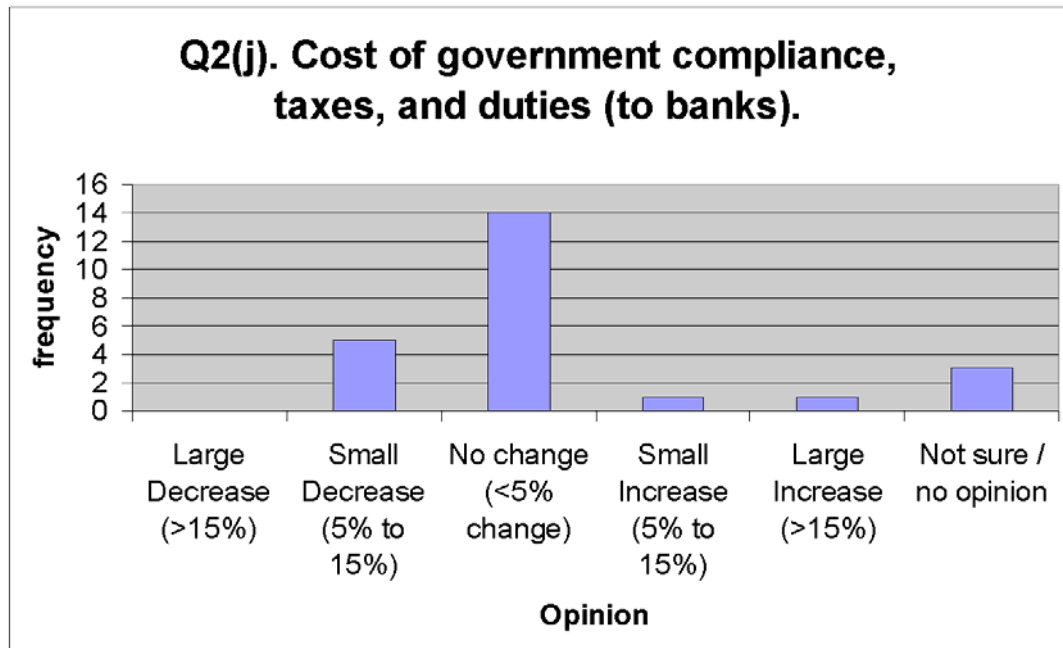


Figure 32: Q2(j) "Cost of government compliance, taxes, and duties."

"No Change" (n=14) is expected in dealing with compliance, taxes and other government charges (question 2(j) Figure 32). Automation might reduce the costs to government agencies of taxing trade transactions, but respondents do not expect governments to return savings to constituents in the form of tax reductions.

Shifts in the costs of trade finance for customers

Question 3 asked about the same costs, but this time about the direction of change for *users of trade finance* rather than for banks.

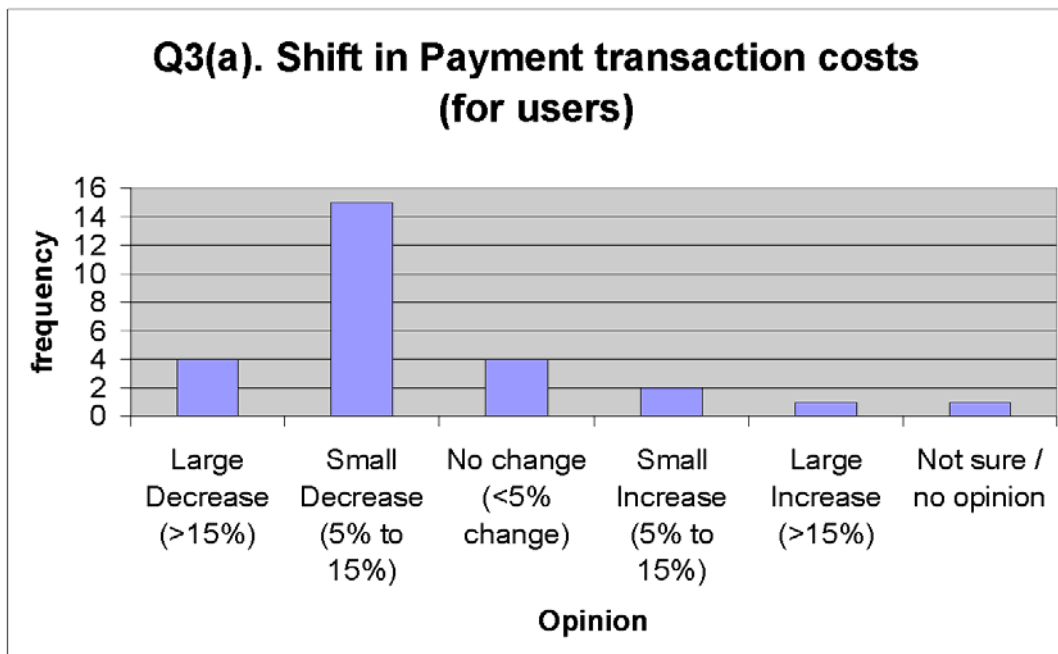


Figure 33: Q3(a) Will “Payment transaction costs” increase or decrease?

A “Small Decrease” (n=15) in user transaction costs is expected (question 3(a) Figure 33). This was the expected result, and questions in round 3 sought to determine a more accurate estimate of the size of this reduction.

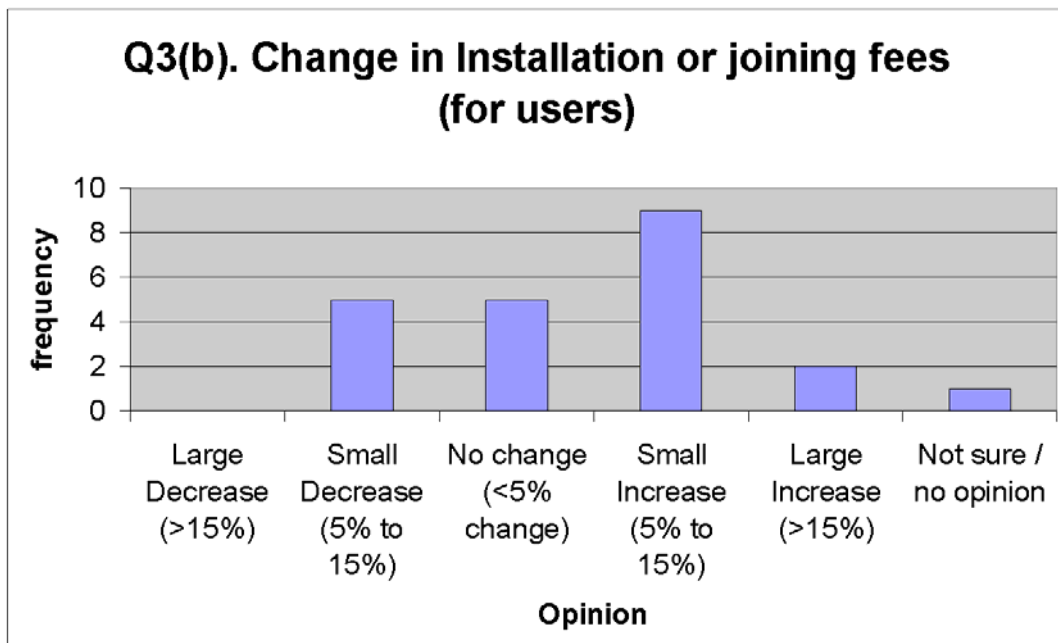


Figure 34: Q3(b) “Installation or joining fees”.

Installation and joining costs are one-time expenses and thus amortized over time (question 3(b) Figure 34). A “Small Increase” (n=9) is expected, but there was also modest support for “No Change” (n=5) and for “Small Decrease” (n=5).

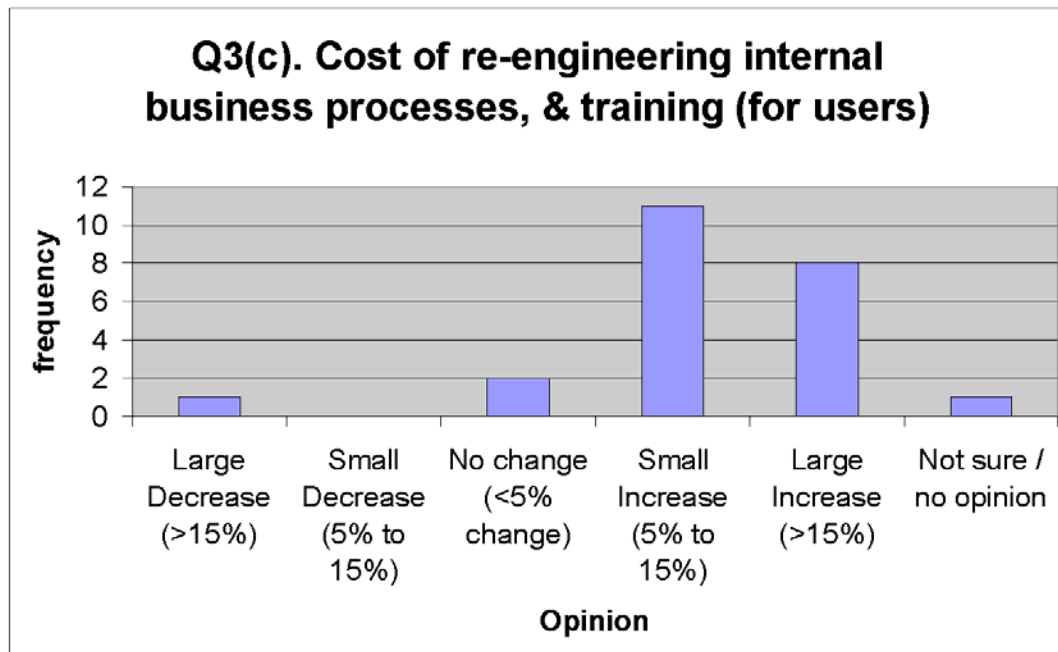


Figure 35: Q3(c) “Cost of re-engineering internal business processes, and of training”.

A “Small Increase” (n=11) is expected, although several respondents thought the increase might be large (n=8) (question 3(c) Figure 35). This cost is an important factor in deciding to make a transition from paper to electronic methods. While one-time costs can be amortised over time, decision makers need to ensure that return on investment is possible and can be achieved in an acceptable time-frame. This was explored further in round 3.

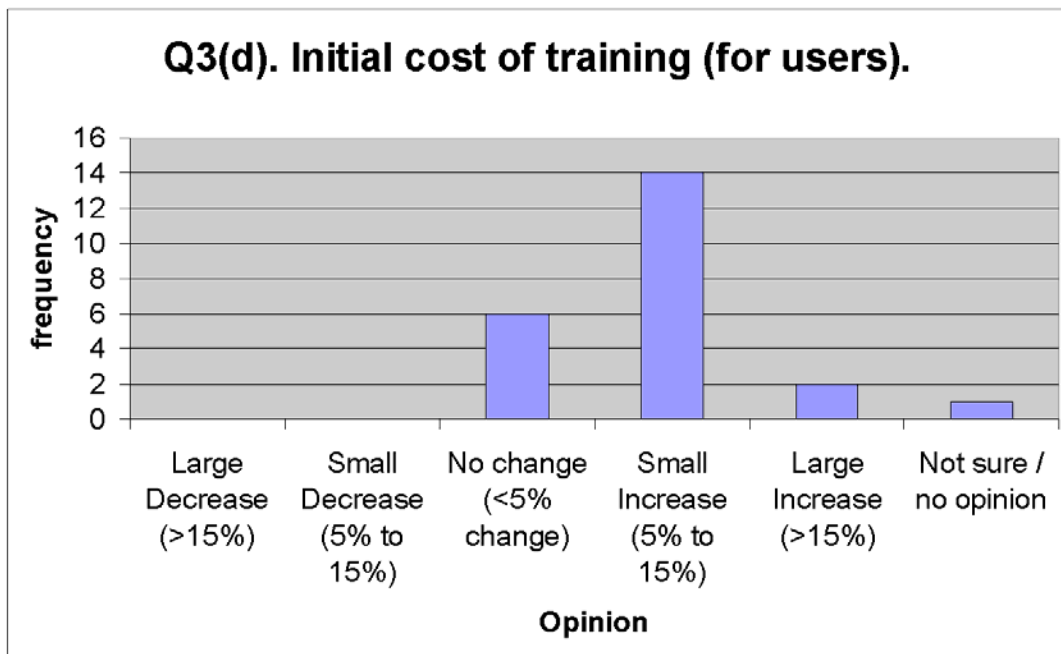


Figure 36: Q3(d) "Initial cost of training".

A "Small Increase" (n=14) is expected to deal with training (question 3(d) Figure 36). This result was expected and, like the costs of re-engineering explored in the previous question, must be seen to provide return on investment within an acceptable time-frame.

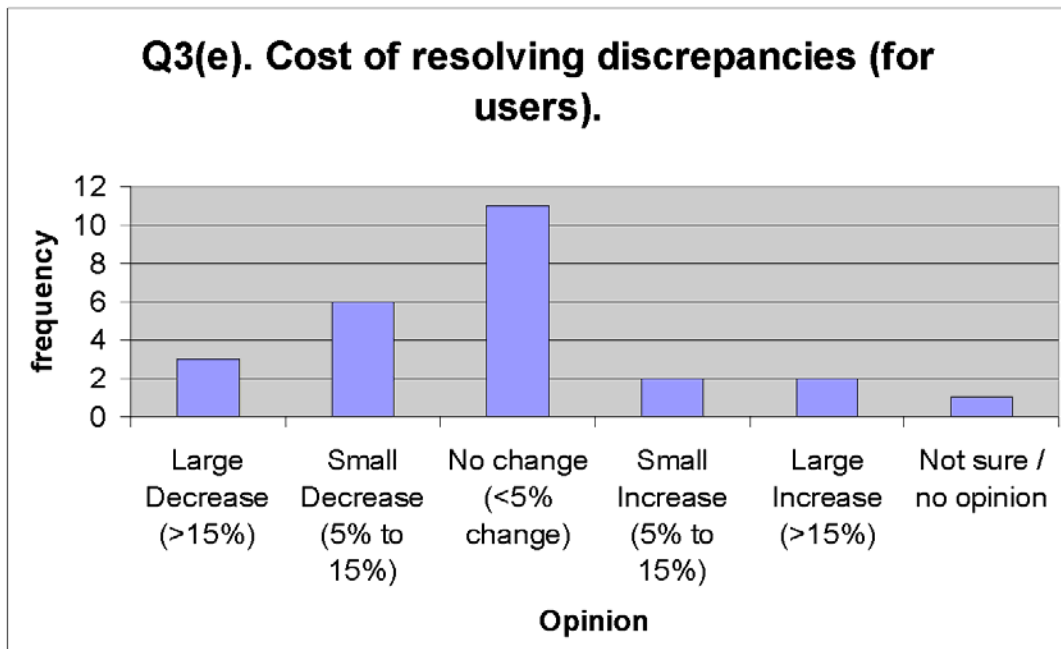


Figure 37: Q3(e) "Cost of resolving discrepancies".

"No Change" (n=11) is expected, although, there was some support for a "Small Decrease" (n=6) in cost (question 3(e) Figure 37). As with the similar result for banks

(in question 2(e), above) some respondents are sceptical of improvement in discrepancy handling. This was investigated further in the next round.

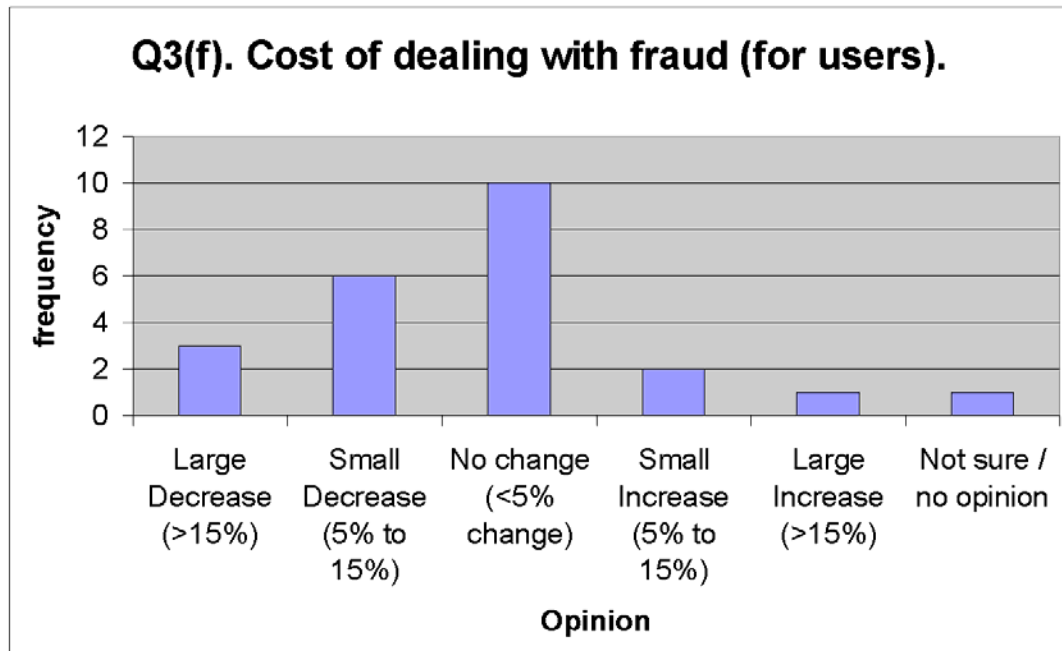


Figure 38: Q3(f) “Cost of dealing with fraud”.

As with the previous question, “No Change” (n=10) is expected, with some support for “Small Decrease” (n=6) (question 3(f) Figure 38). This was a clearer outcome than that expected for the cost of fraud to banks. Trade practices legislation and consumer legislation may protect customers from the cost of dealing with fraud; costs are carried by financial service providers which are expected to combat fraud on behalf of their customers.

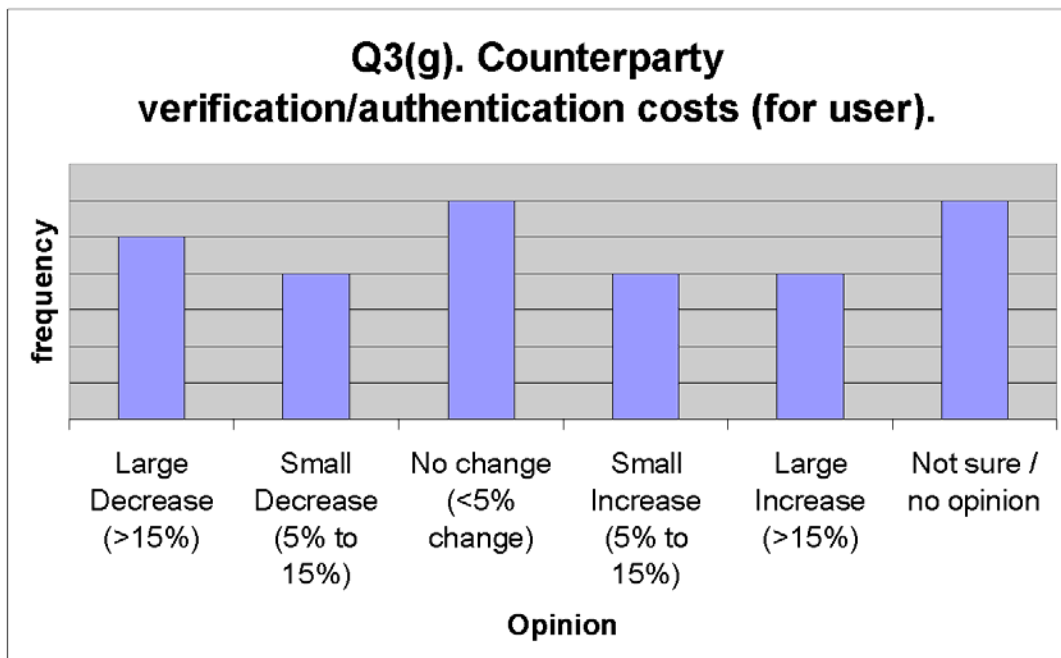


Figure 39: Q3(g) “Counterparty verification/authentication”.

Response to this question (3(g) Figure 39) was spread. It is discussed further below under the heading “Contentious issues”.

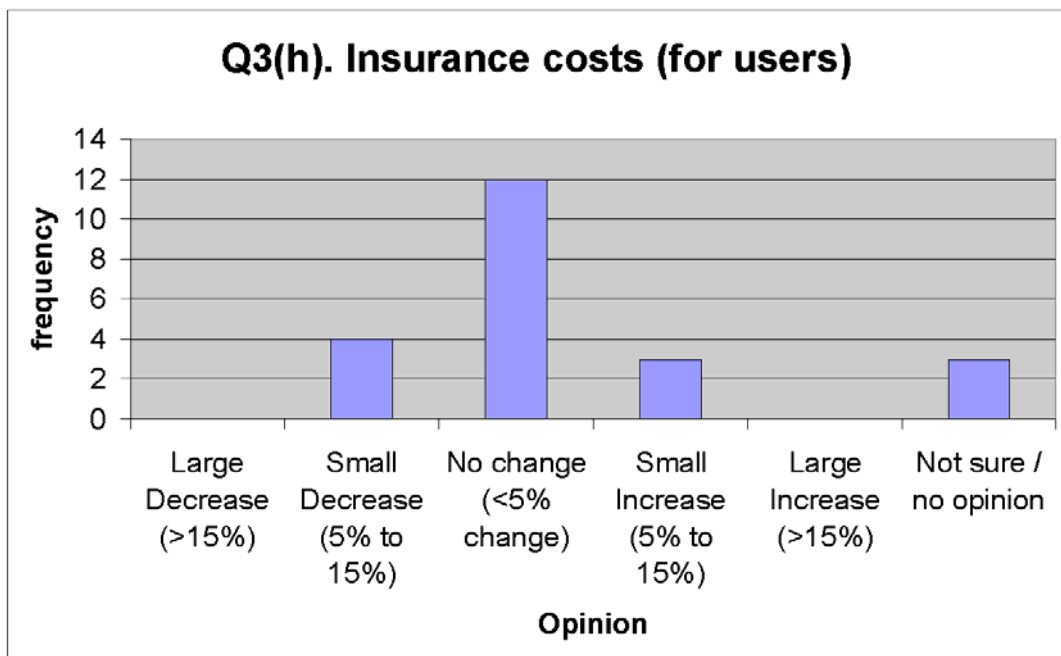


Figure 40: Q3(h) “Insurance cost for banks”.

”No Change” (n=12) is expected to the cost of insurance for users (question 3(h) Figure 40). Change in this cost will ultimately depend on shift in risk. As risk reduces, the cost

of insurance (which is the price of laying off risk) will also reduce. However, a rise in risk would, conversely, increase the cost of insurance.

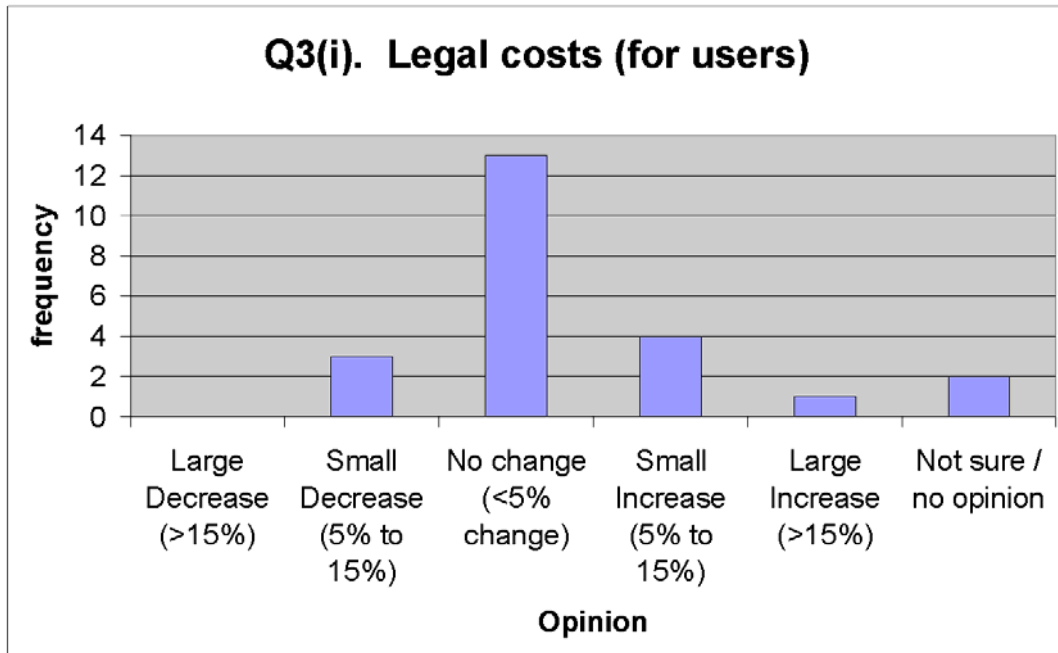


Figure 41: Q3(i) "Legal costs".

"No Change" (n=13) is expected to the cost of legal services (question 3(i) Figure 41). As this component of service does not usually become automated, expectation of no change is reasonable.

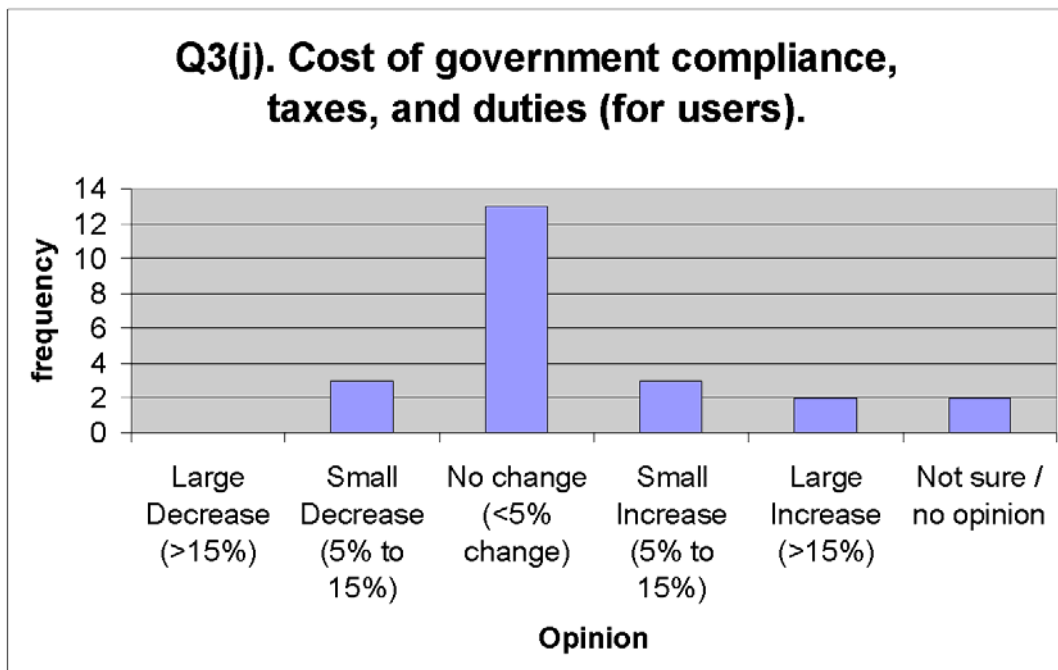


Figure 42: Q3(j) "Cost of government compliance, taxes, and duties."

”No Change” (n=13) is expected to compliance costs or to taxes and other government charges (question 3(j) Figure 42). As with question 2(j), any reduction in costs to government agencies is considered unlikely to be passed on to importers or exporters in the form of reduced taxation.

Shifts in the risks of trade finance for banks

Questions 4 and 5 explored change in risk. Q4 addressed changes of risk to banks and other financial service providers, while Q5 concerned users of trade finance. The questionnaire sought 5-point Likert-scaled responses with an additional choice for “Not Sure/No Opinion”. A “small change” was described as a 5% to 15% increase or decrease, while a “large change” was more than 15%.

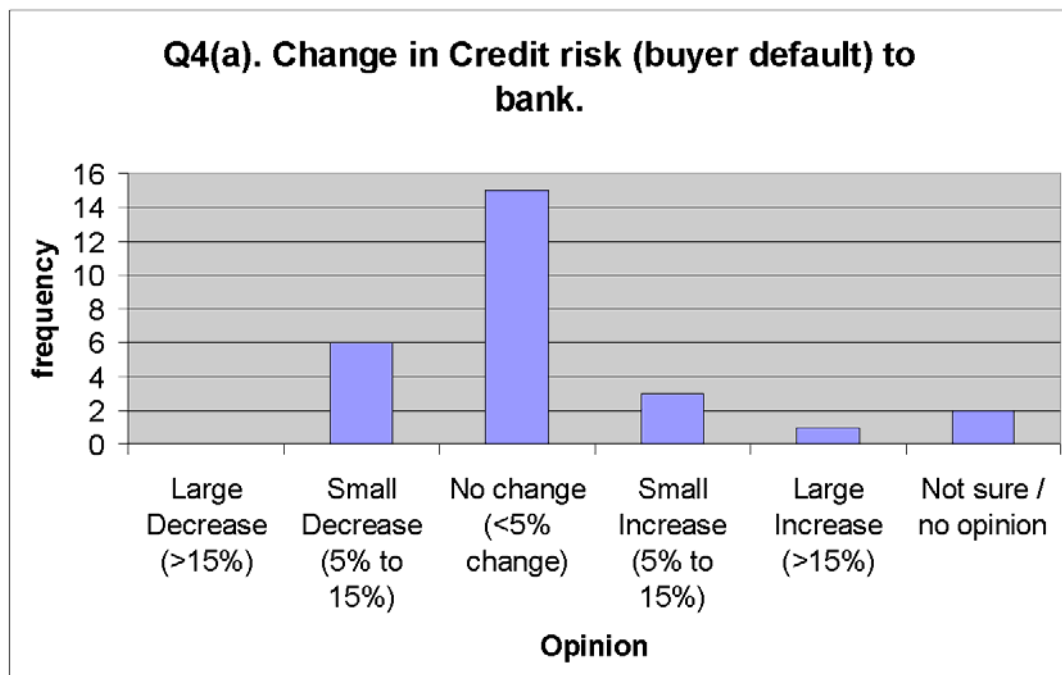


Figure 43: Q4(a) Will “Credit risk (buyer default)” to banks increase or decrease?

“No Change” (n=15) is expected to credit risk (question 4(a) Figure 43). The cost and risk of performing a service should have no bearing on the reliability of a potential trade partner, so no change in credit risk is a reasonable expectation. However, a reduction in the delays between supply and payment might reduce opportunity for default and so some decrease is possible. This appears to be reflected in the minority expectation for a “small decrease” in credit risk shown in the responses to question 4(a).

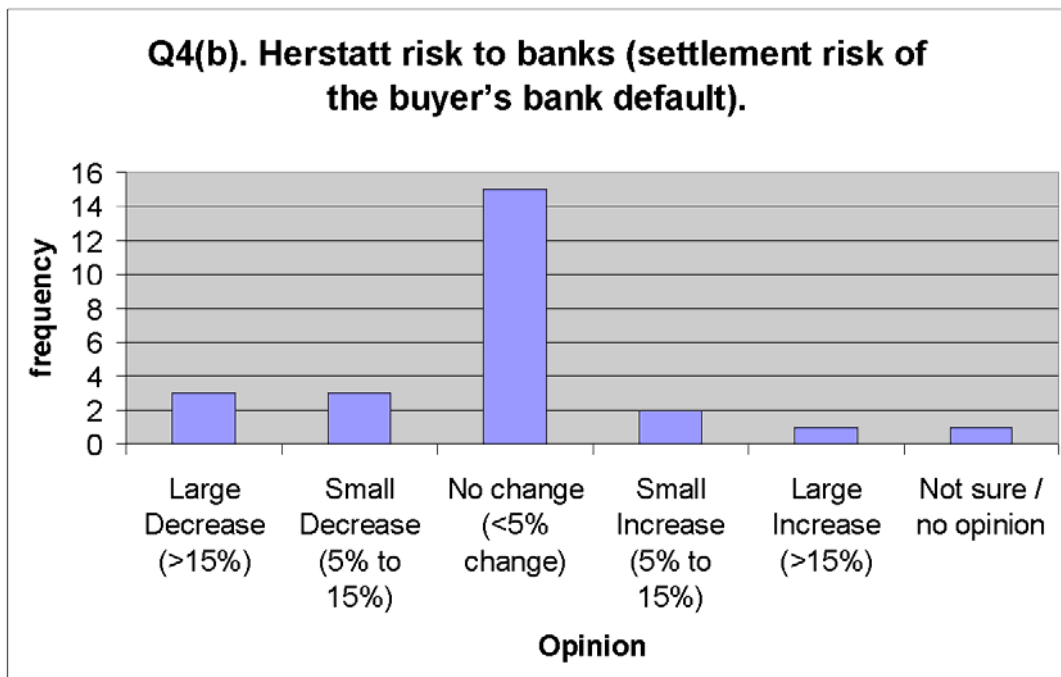


Figure 44: Q4(b) “Herstatt risk”.

“No Change” (n=15) is expected to settlement risk between banks (question 4(b) Figure 44). The reliability of banks’ ability to pay is much more determined by their credit practices than their automation of transactions, and so no change is expected here.

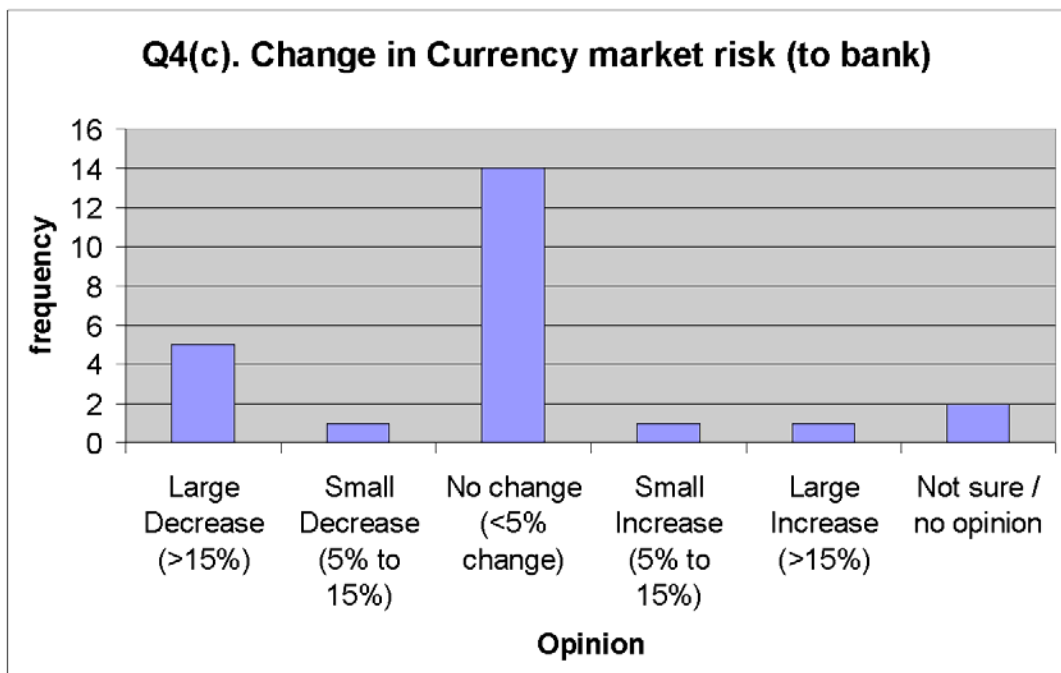


Figure 45: Q4(c) “Currency market (exchange) risk”.

“No Change” (n=14) is expected to exchange rate risk (question 4(c) Figure 45). The researcher expected a small or even large decrease here because as the time delay between supply and payment is diminished by automation, the opportunity for currency shift should also be diminished. This result was raised to respondents in the Round 2 report but no one commented. The outcomes of future transactions, and future research, will have to supply the answer to this question.

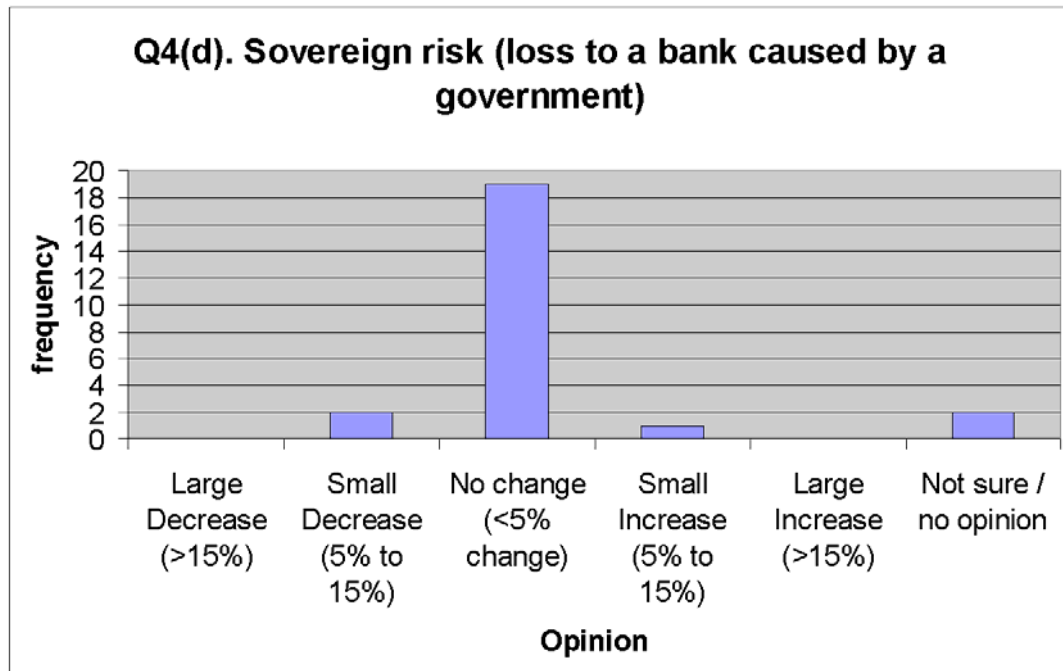


Figure 46: Q4(d) “Sovereign risk (loss to a bank caused by a government)”.

“No Change” (n=19) is expected to sovereign risk (question 4(d) Figure 46). As with credit risk, one cannot expect automation to change the reliability of a counter party in meeting contractual payment terms. However, the researcher does expect that reduced time delays in transaction processing due to automation should reduce opportunity for default and so may ultimately reduce sovereign risk to banks and to exporters.

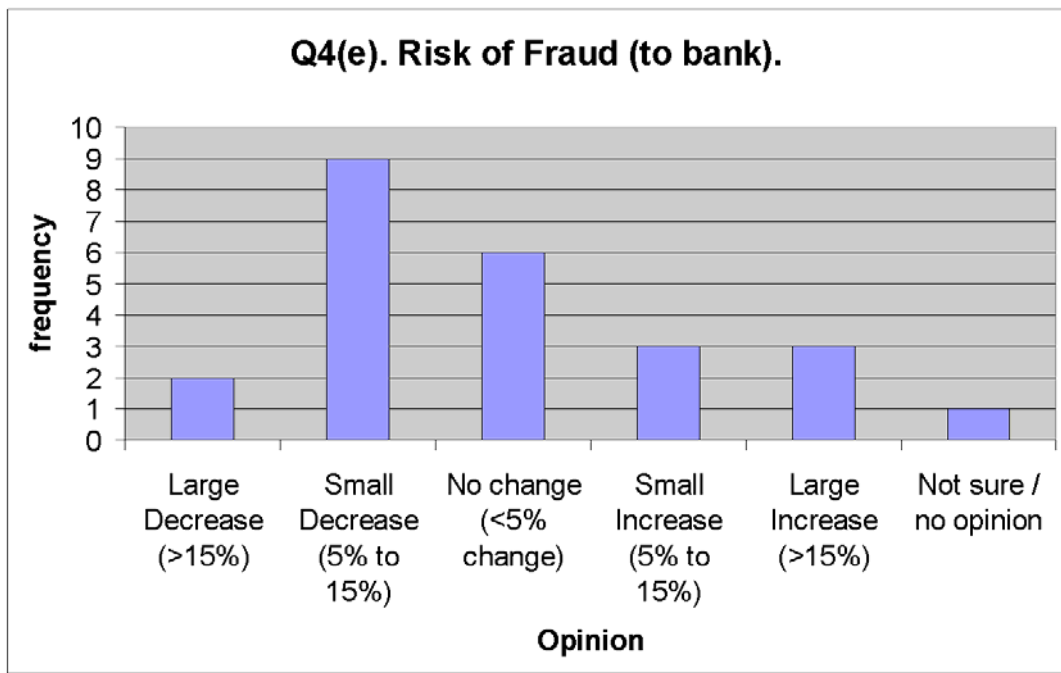


Figure 47: Q4(e) "Fraud risk".

A "Small Decrease" (n=9) is expected in the risk of fraud (question 4(e) Figure 47). However, a few expect "No Change" (n=6). A decrease was the expected result due to improved authentication tools available through cryptographic methods and tools offered by services such as Identrus and embedded in services such as Bolero and Tradecard.

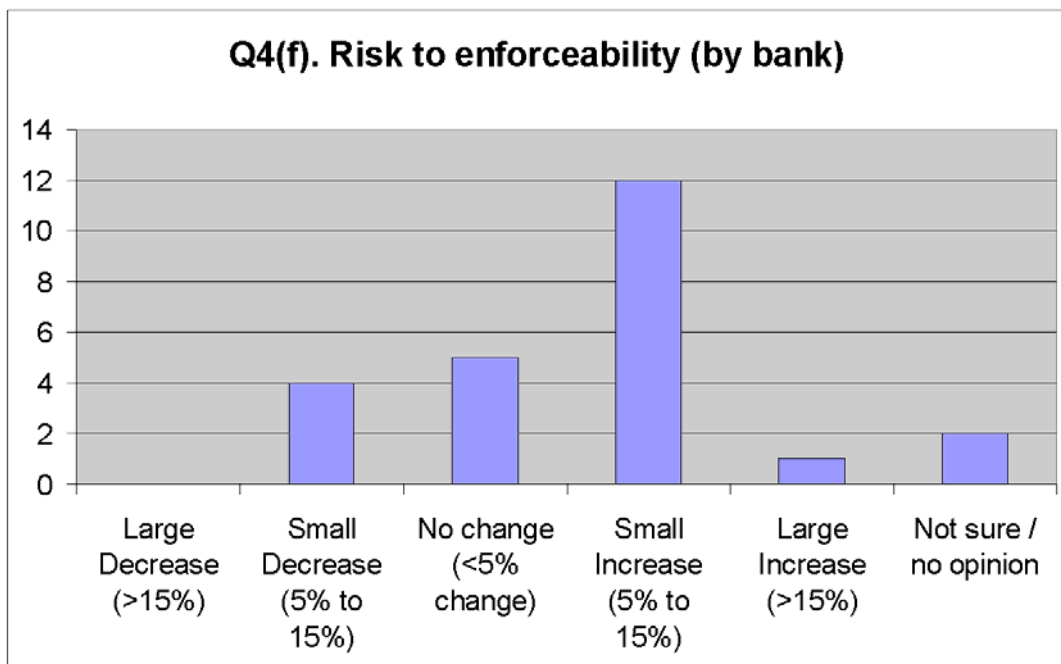


Figure 48: Q4(f) "Risk to enforceability".

A “Small Increase” (n=12) is expected in the risk of international enforceability (question 4(f) Figure 48). However, a few expect “No Change” (n=5). There was no explanatory comment about this increased risk and so it was assumed the comments made by respondents on earlier questions concerning legal systems lagging behind industry change might be the cause of the increase. Respondents were asked to comment further in the third round.

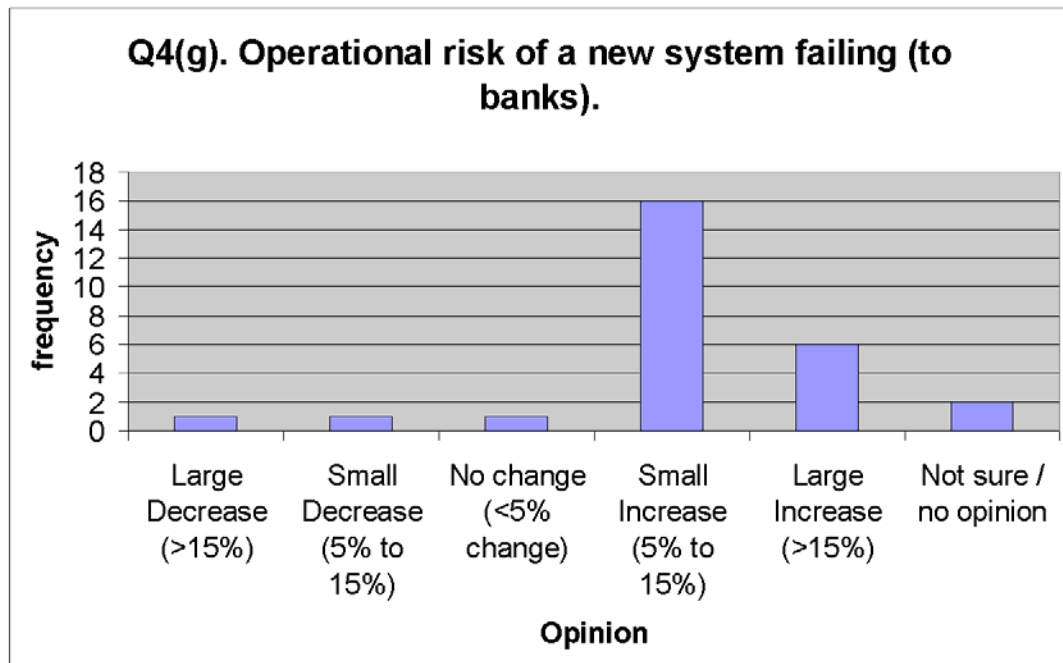


Figure 49: Q4(g) “Operational risk of a new system failing”.

A “Small Increase” (n=16) is expected in the risk of operational aspects of trade failing due to technological change (question 4(g) Figure 49). A technological failure is much more likely during the early days of a system’s implementation as “bugs” are identified and resolved. However, reliability should improve over time, as should the competence and confidence of those using the system. In time the small increase expected here should subside, and perhaps even become a decrease in the longer term.

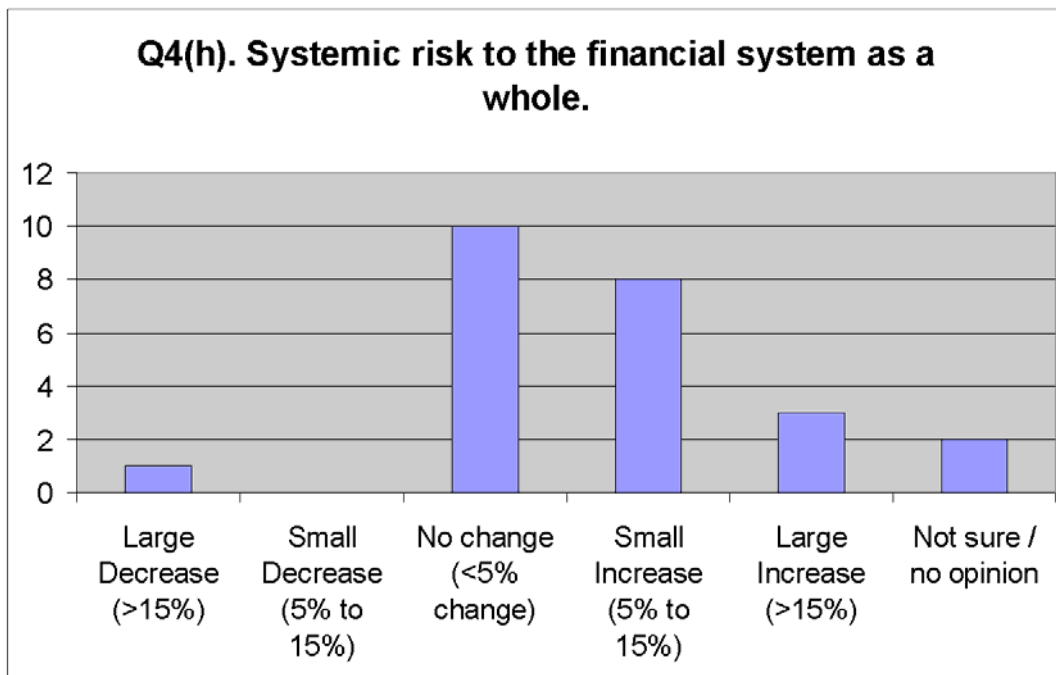


Figure 50: Q4(h) “Systemic risk to the financial system as a whole”.

10 respondents expect no change in the risk of the financial system failing as a whole (question 4(h) Figure 50), but there was also firm support for a “Small Increase” (n=8). As with operational risk, this is a risk which could be relatively high when systems are new, but reduce over time as bugs are ironed out and users become more confident and competent.

Shifts in the risks of trade finance for customers

Concerning risks to users of trade finance:

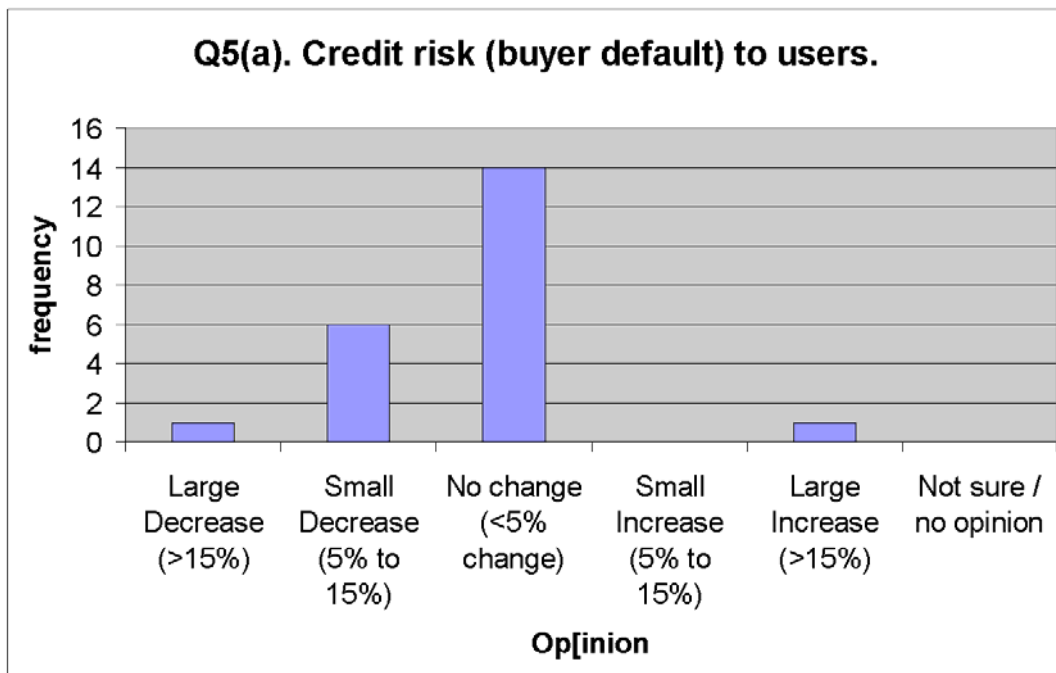


Figure 51: Q5(a) Will “Credit risk (buyer default)” to users of trade finance increase or decrease?

“No Change” (n=14) is expected to credit risk for users of trade finance (question 5(a) Figure 51). As with the similar question concerning banks (question 4(a)), the cost and risk of using a service should have no bearing on the reliability of a potential trade partner, so no change in credit risk is a reasonable expectation. A reduction in the delays between supply and payment might reduce opportunity for default and so some decrease is possible. This appears to be reflected in the minority expectation of a “small decrease” in credit risk shown in the responses to question 4(a).

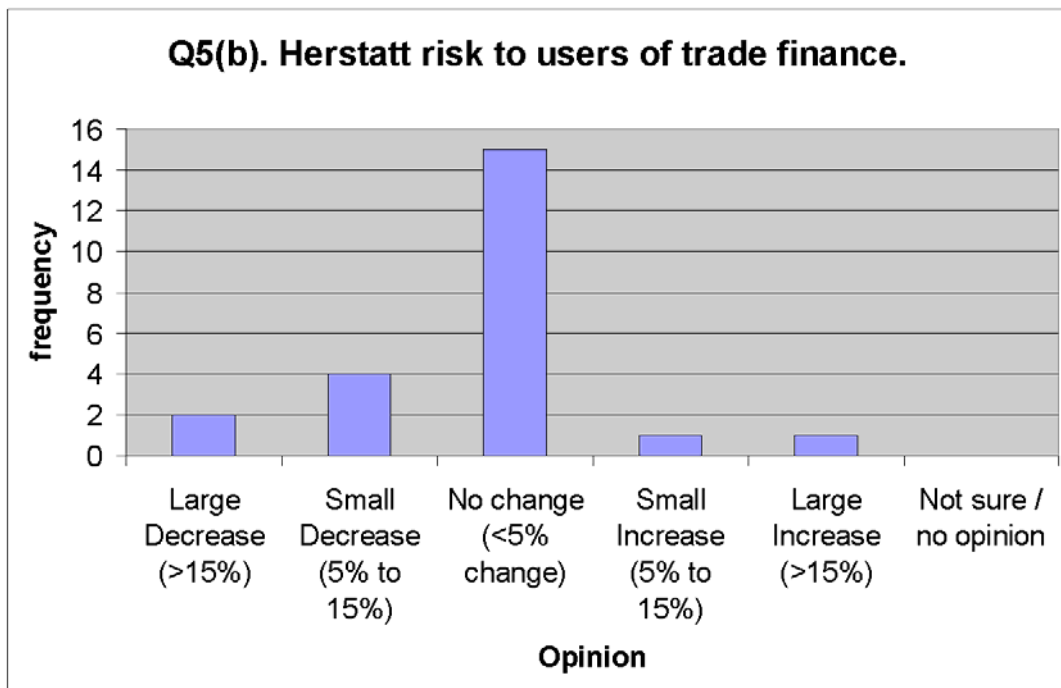


Figure 52: Q5(b) “Herstatt risk”.

“No Change” (n=15) is expected to Herstatt (settlement) risk in its effect on users of trade finance (question 5(b) Figure 52). The expectation is that trade finance users are shielded from inter-bank settlement failure by service guarantees and legislative protection, so this risk will not shift significantly with dematerialisation of trade documentation.

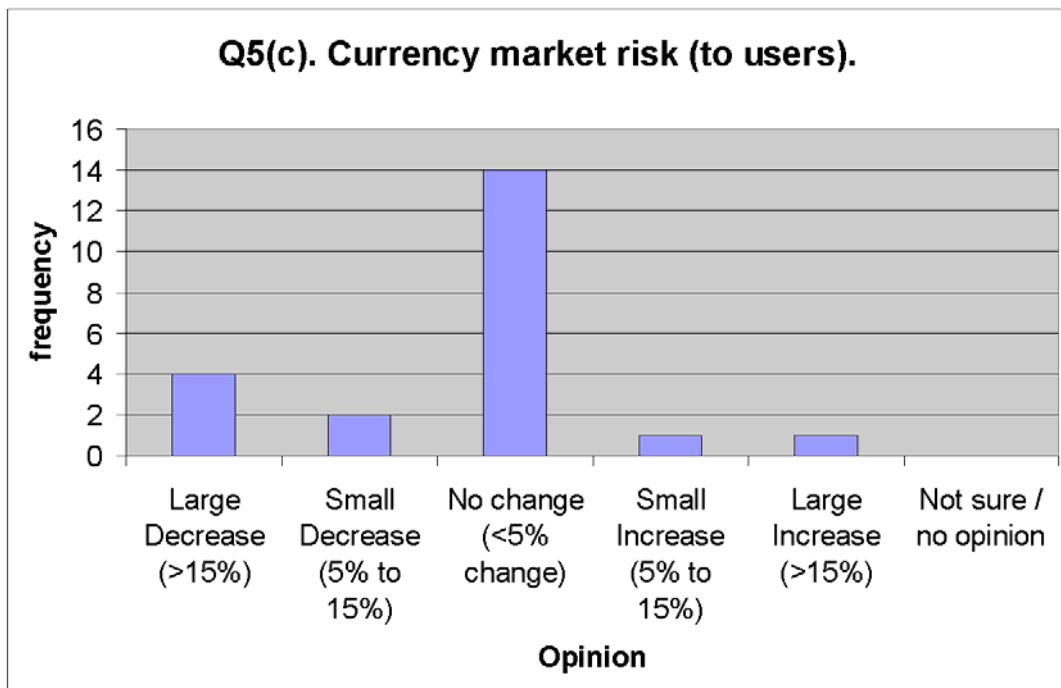


Figure 53: Q5(c) “Currency market (exchange) risk”.

“No Change” (n=14) is expected to exchange rate risk (question 5(c) Figure 53). The researcher expected that exchange rate risk would reduce in proportion to the reduction in delay in completing transactions because quicker settlement means less time for currencies to drift apart in value. Quicker settlement was expected by responses in the first round, and it is a priority of projects such as CLS. This result is unexpected and therefore is examined in more detail later.

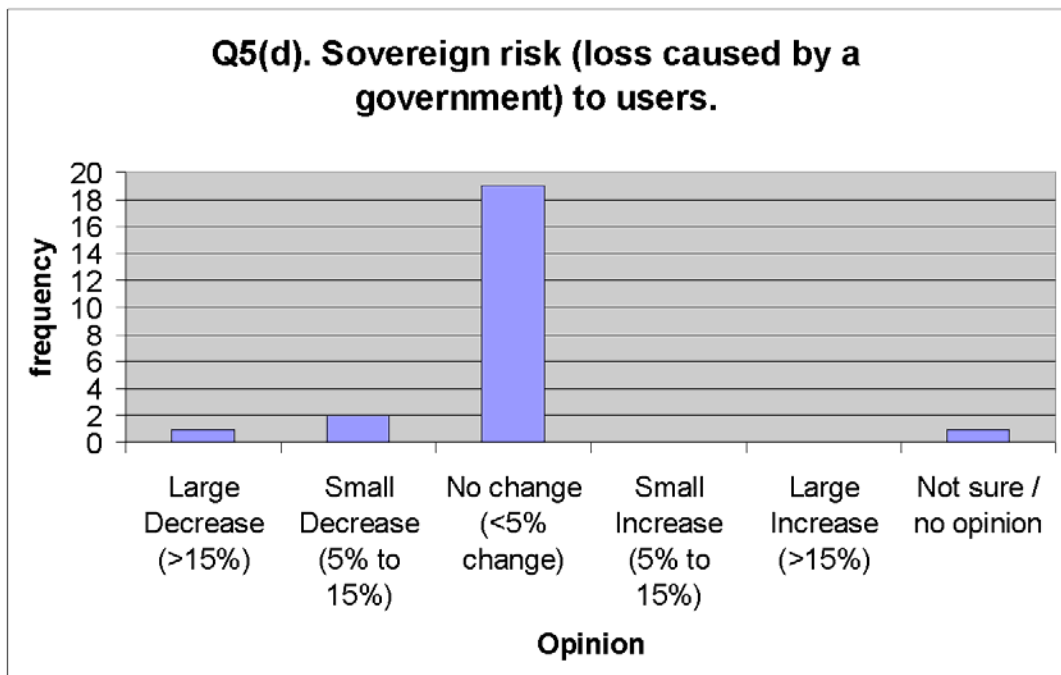


Figure 54: Q5(d) “Sovereign risk (loss to a bank caused by a government)”.

“No Change” (n=16) is expected in the risk of government imposed losses (question 5(d) Figure 54). One might expect a small decrease in this risk if transactions could be settled more quickly. However, sovereign risk may be much more a function of government policy and practice than one of speedy contract resolution, so an expectation of “no change” is reasonable here.

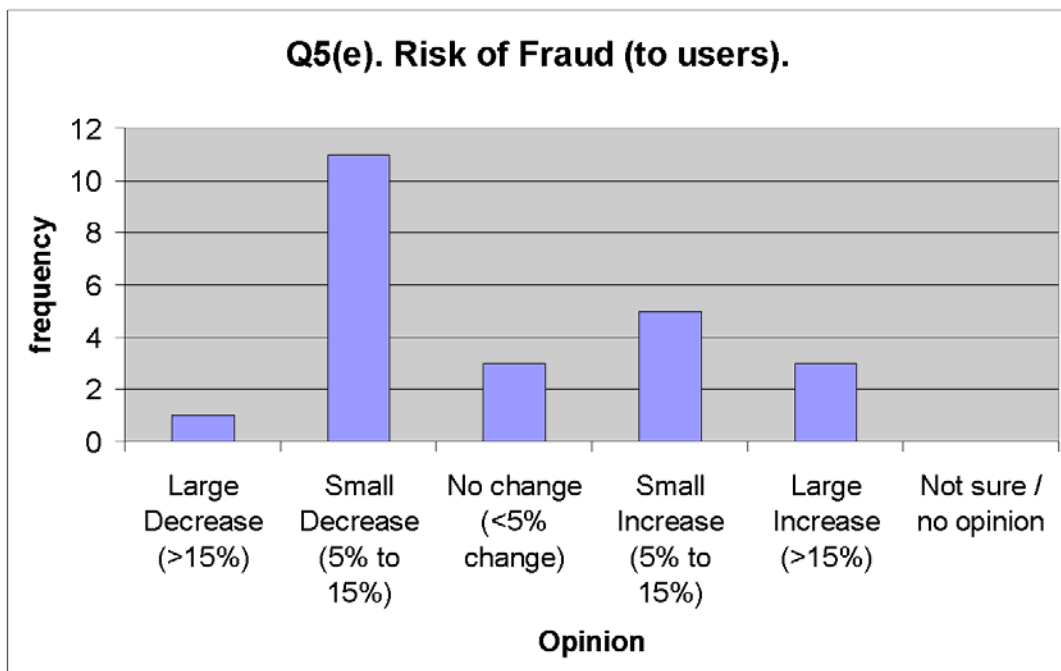


Figure 55: Q5(e) “Fraud risk”.

Question 5(e) (Figure 55) shows a “Small Decrease” (n=11) in fraud risk is expected. However, a few respondents expected a “Small Increase” (n=5). Built in authentication tools based on strong cryptographic methods should reduce fraud based on forgery and identity misrepresentation; but as discussed later, the risk of “insider” fraud is still an open question which will require time to clarify.

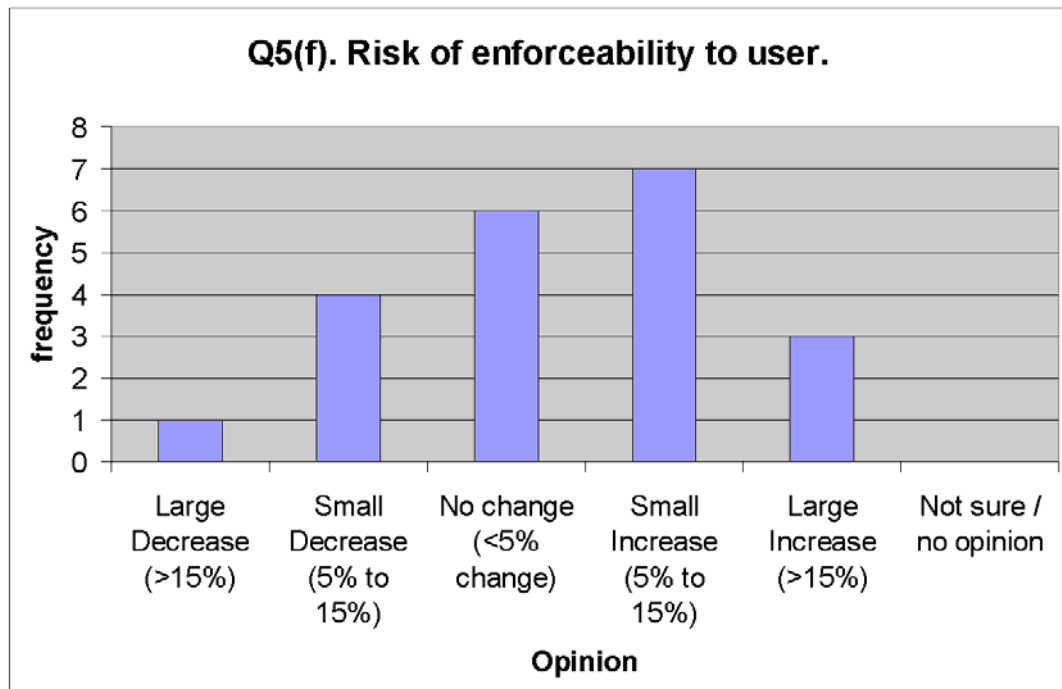


Figure 56: Q5(f) “Risk to enforceability”.

Responses were spread on question 5(f) (Figure 56): “Small Increase” (n=7), “No Change” (n=6), “Small Decrease” (n=4) in the risk of enforceability for users of trade finance. This result might have arisen given the lag of law behind practice, which has already been mentioned. However, in the longer term, the uniformity of legal interpretation imposed by both the UNCITRAL model law for e-commerce, and uniform contracts such as the Bolero agreement, should eventually bring international legal interpretation to greater harmony than it has ever enjoyed.

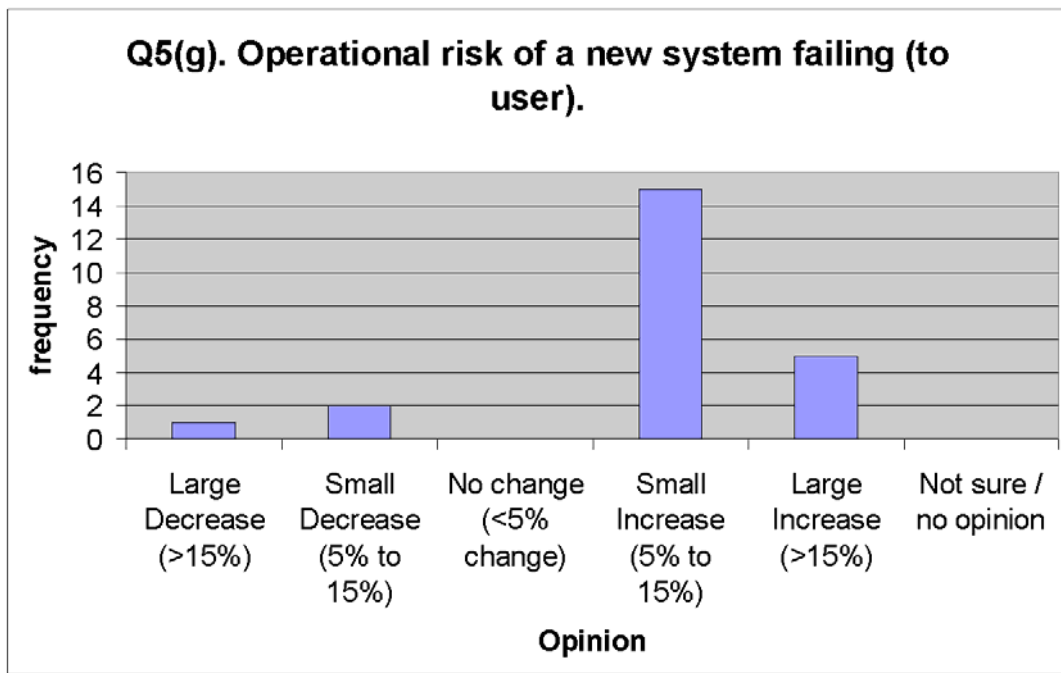


Figure 57: Q5(g) “Operational risk of a new system failing”.

Question 5(g) (Figure 57) shows a “Small Increase” (n=15) is expected in operational risk. This is a transition effect: that is, once new systems are “bedded in” and debugged, the risk of failure should decline.

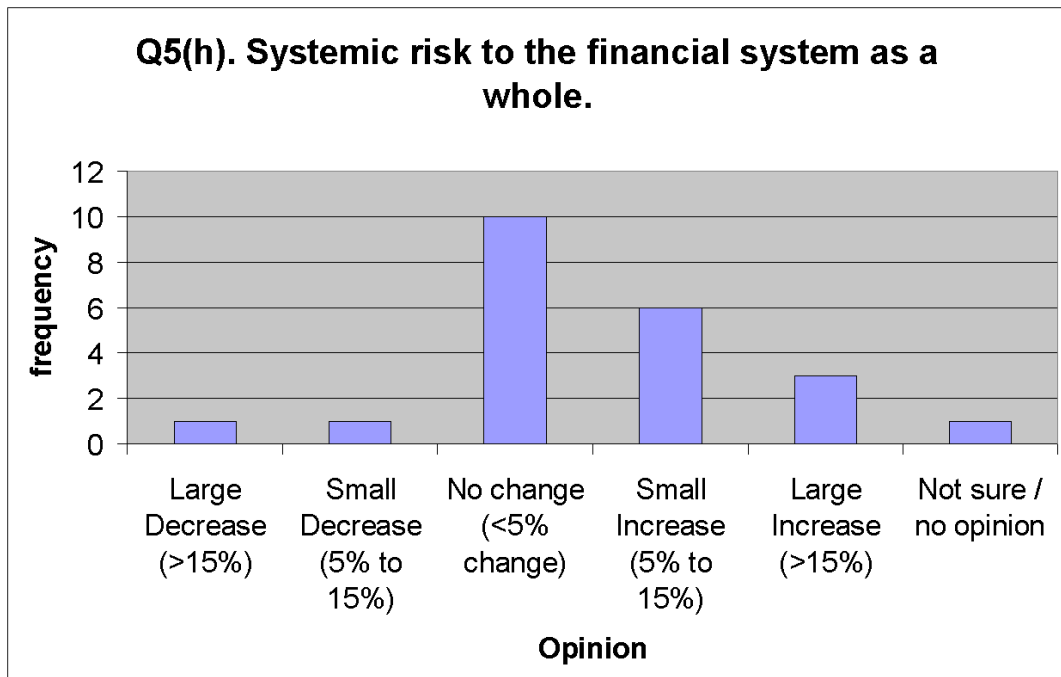


Figure 58: Q5(h) “Systemic risk to the financial system as a whole”.

“No Change” (n=10) is expected to the level of systemic risk (question 5(h) Figure 58). This risk is small and primarily one borne by members of the banking community, so “no change” for users of trade finance is an expected result.

Shifts in the competitive environment

Changes to the competitive environment are anticipated by the theory of Malone, Yates & Benjamin (1987). Competitive change was also raised in Round 1 by some of the respondents. Question 6 dealt with aspects of emerging competition and potential consolidation so that this could be further explored.



Figure 59: Q6(a) “More new online services for trade finance will soon be offered.”

Most agreed (n=16) with question 6(a) (Figure 59) that new services would soon be offered and 7 respondents strongly agreed. This is consistent with predictions made by Dixon & Bauer (2000). Indeed, since the survey, some new services have been announced.

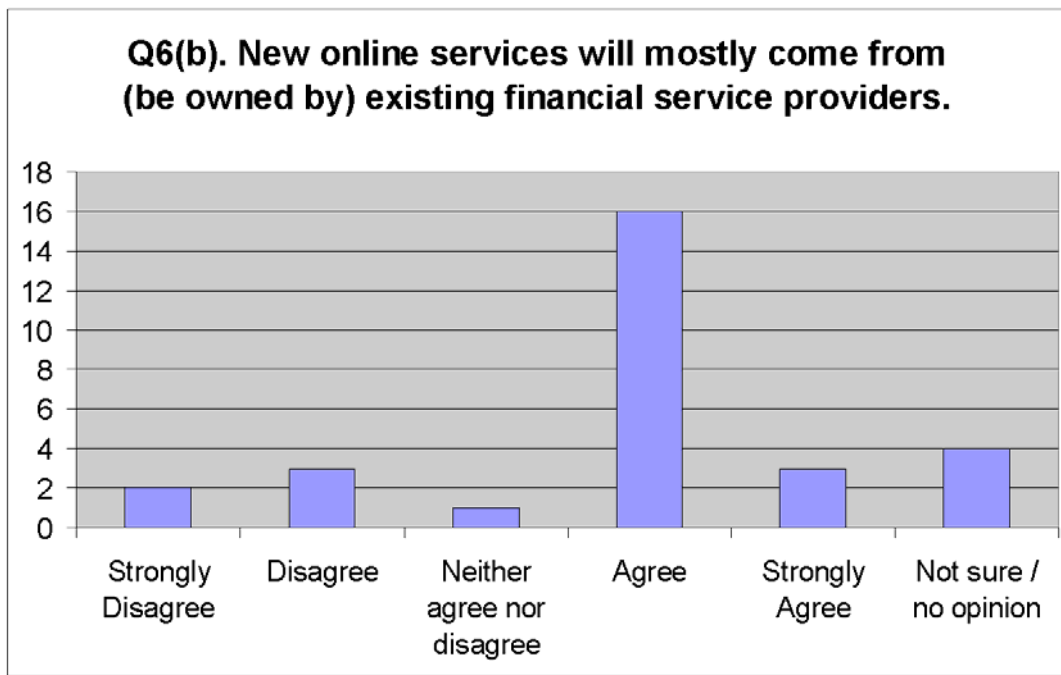


Figure 60: Q6(b) “New online services will mostly come from (be owned by) existing financial service providers.”

Most respondents agreed (n=16) that new services would mostly come from the existing financial service providers (question 6(b) Figure 60). Since the survey was taken, this has proven to be the case in the industry.

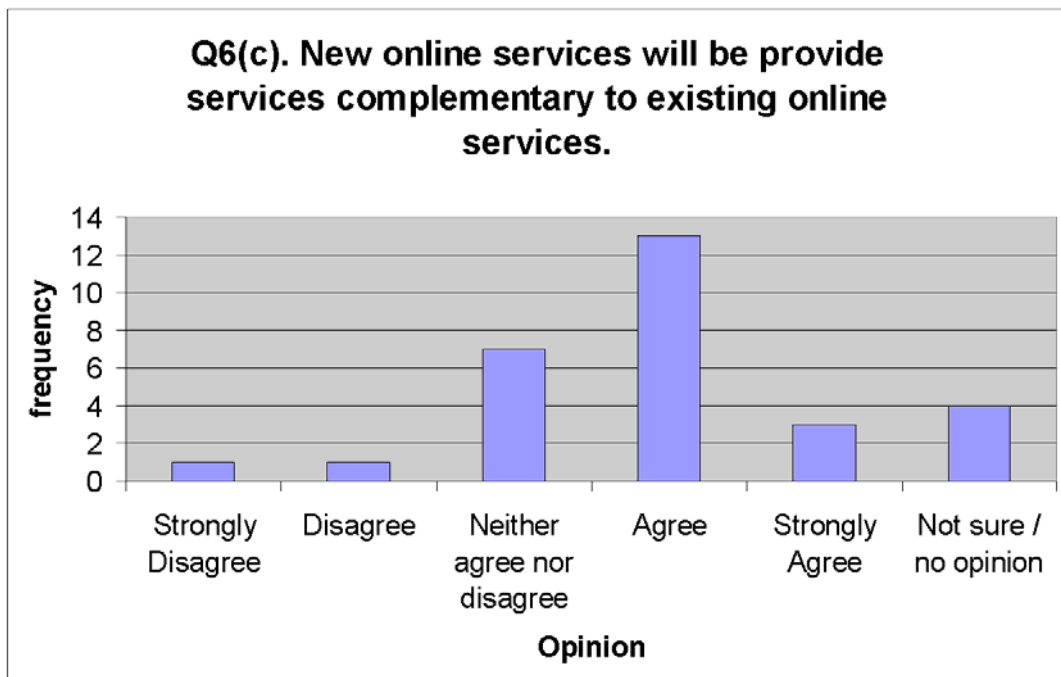


Figure 61: Q6(c) “New online services will provide services complementary to existing online services.”

Most respondents agreed (n=13) that new online services would complement existing services (question 6(c) Figure 61). Dixon & Bauer (2000) predicted that complementary services would fill gaps in the multi-step transaction process to provide better end-to-end service integration. Without this, some of the benefits of de-materialisation cannot be realised, as parts of the process remain paper-based. This expectation has also been realised in practice since the survey was completed.

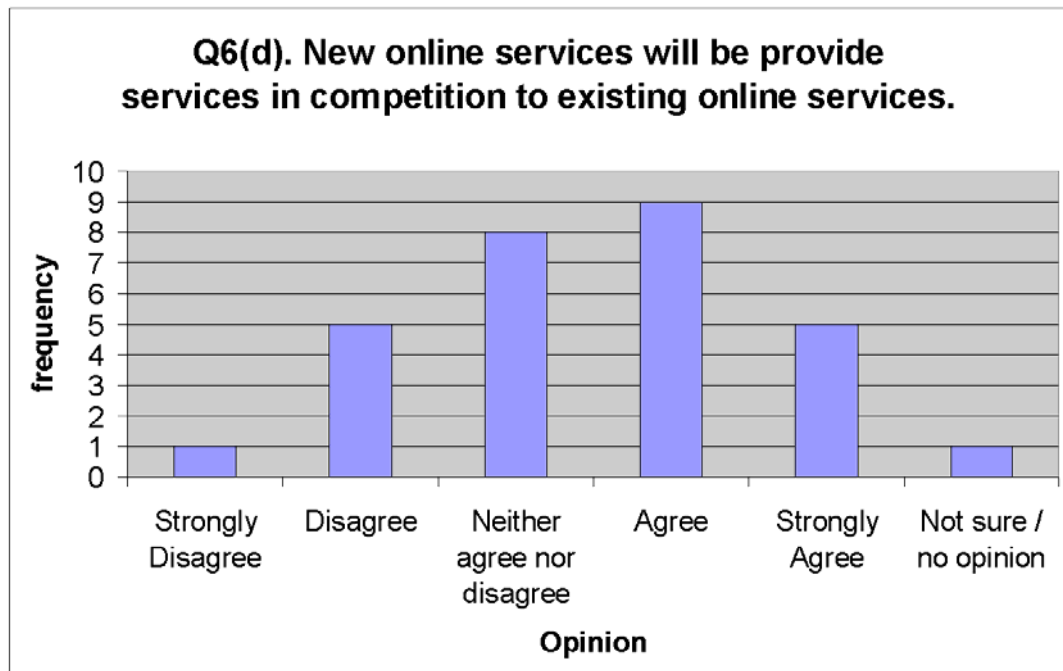


Figure 62: Q6(d) “New online services will be provide services in competition to existing online services.”

Many respondents agreed (n=9) with question 6(d) (Figure 62), though several neither agreed nor disagreed (n=8) that new online services would operate in competition to existing online services. One reason for expecting this outcome would be competition between the largest banks seeking at least a temporary competitive advantage over rivals. However, as most of the systems emerging are large, expensive, interoperating, and owned by consortia of most of the large and medium sized banks in the industry, there is also good reason not to expect a great deal of competition in the longer term.

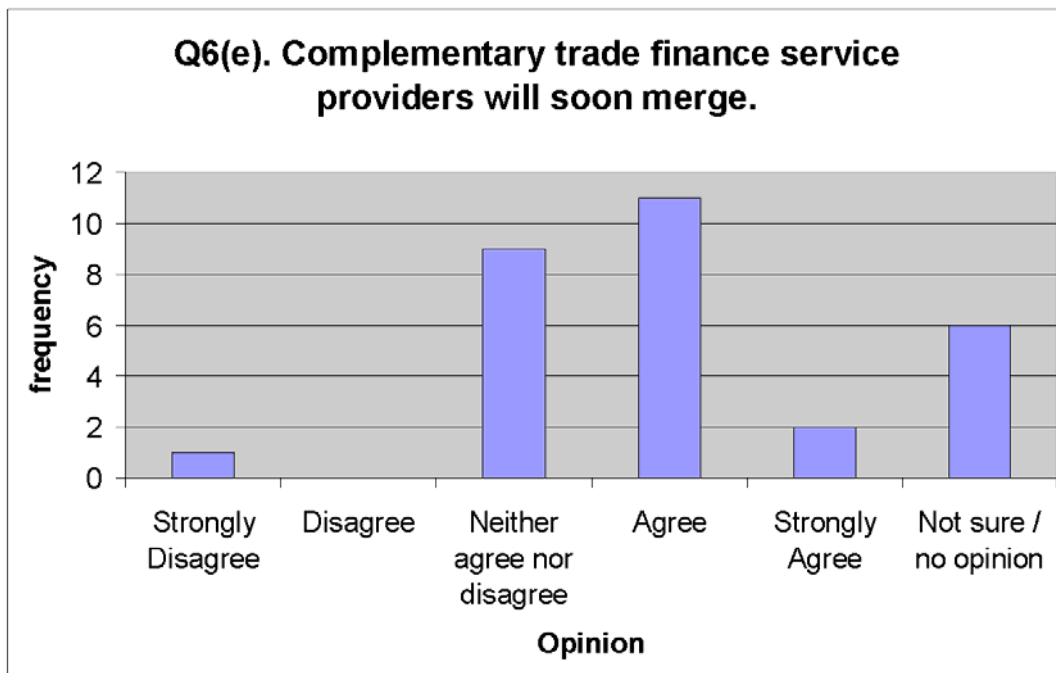


Figure 63: Q6(e) “Complementary trade finance service providers will soon merge.”

Question 6(e) (Figure 63) sought to determine if the online trade finance market has matured enough to begin to consolidate. 11 respondents agreed and 9 neither agreed nor disagreed that complementary service providers will soon merge. Dixon & Bauer (2000) predict that merging of services is inevitable as the market matures, not only based on traditional management theory such as Porter’s competitive theories, but also because most of the emerging systems are owned by large consortia of banks and thus have some shared ownership by default. Making such systems interoperate smoothly increases their mutual value and so there are good reasons to merge control over these systems.

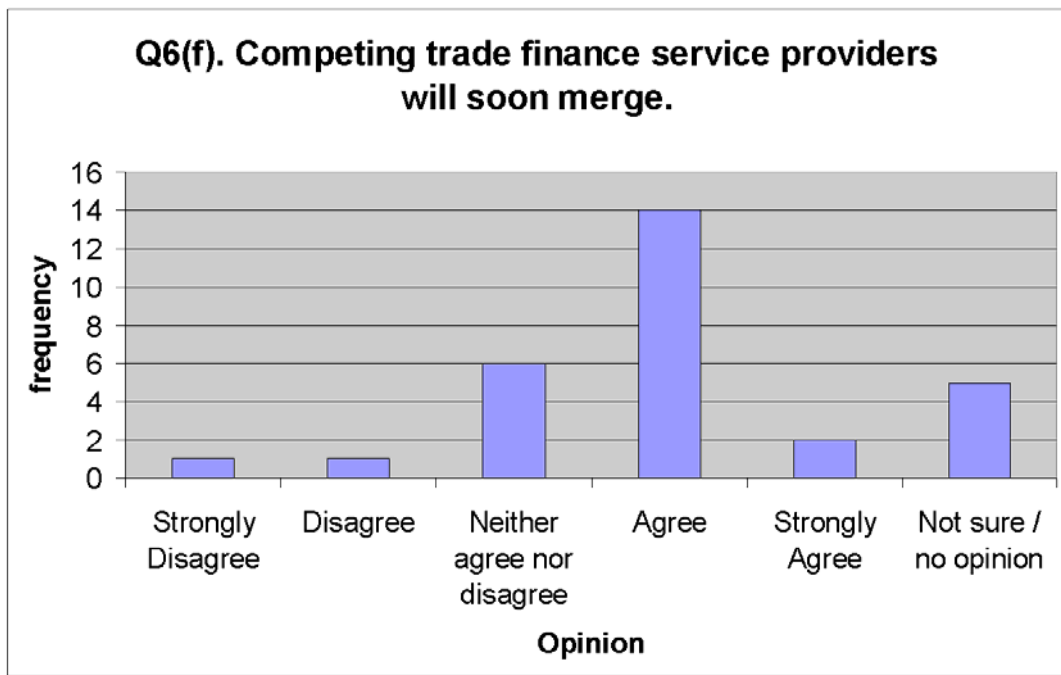


Figure 64: Q6(f) “Competing trade finance service providers will soon merge.”

Most (n=14) respondents agree that competing finance service providers are likely to merge (question 6(f) Figure 64). There is an expectation that the market is already sufficiently mature to consolidate. As discussed under the previous question, there are also reasons of interoperability that will make merging of competing trade services attractive. This is discussed in more detail in Dixon & Bauer (2000).

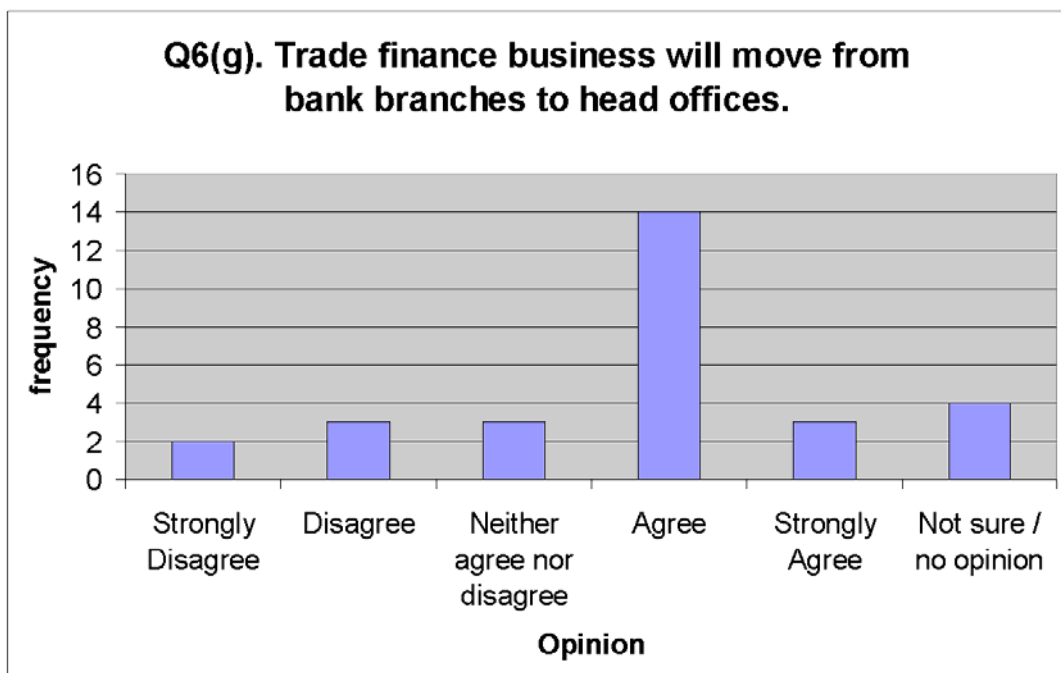


Figure 65: Q6(g) “Trade finance business will move from bank branches to head offices.”

Most respondents agree (n=14) that online services will push business from bank branches to head offices (question 6(g) Figure 65). However, three comments point out that personal customer contact will continue to be essential. Probably the main reason for expecting this shift is that international and inter-bank systems generally interconnect through the central computing facilities of each bank. This is a centralising force compared to the traditional international correspondent agreements that often work at a branch level. Automated systems taking on work such as credit assessment and approval would tend to centralise some trade finance functions.

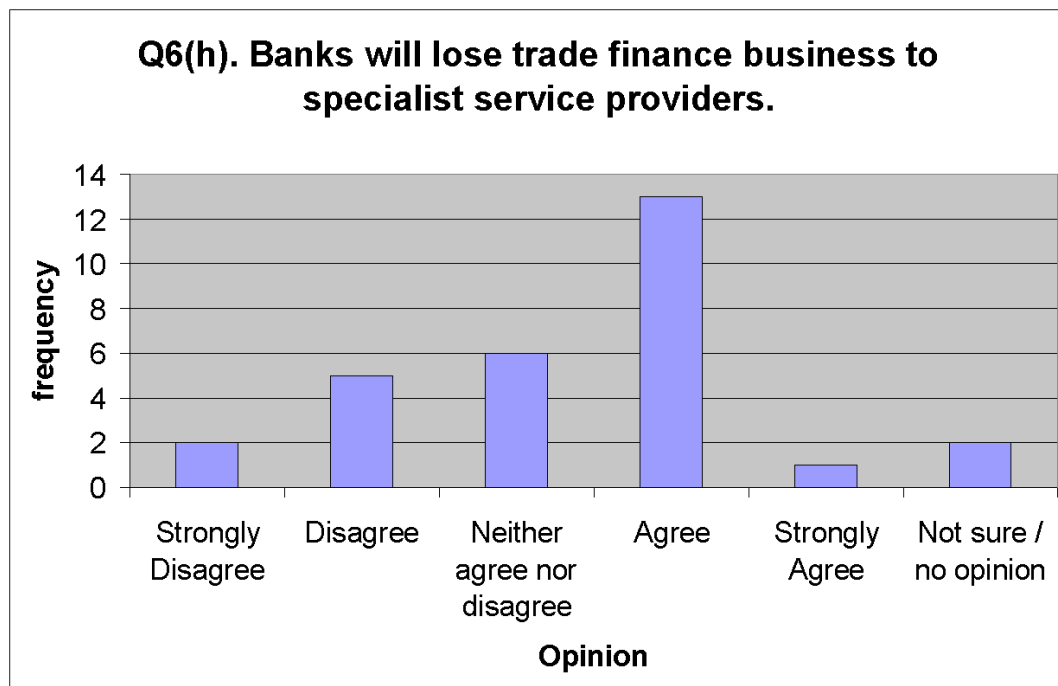


Figure 66: Q6(h) “Banks will lose trade finance business to specialist service providers.”

Most respondents agree (n=13) that specialist service providers will draw business away from banks (question 6(h) Figure 66). This supports the Malone, Yates & Benjamin (1987) hypothesis that information technologies will shift transactions from hierarchies to markets. This will affect the structure of the industry, although from a competitive perspective the effect may be softened by the fact that the banks are in most cases the owners of these new specialty services.

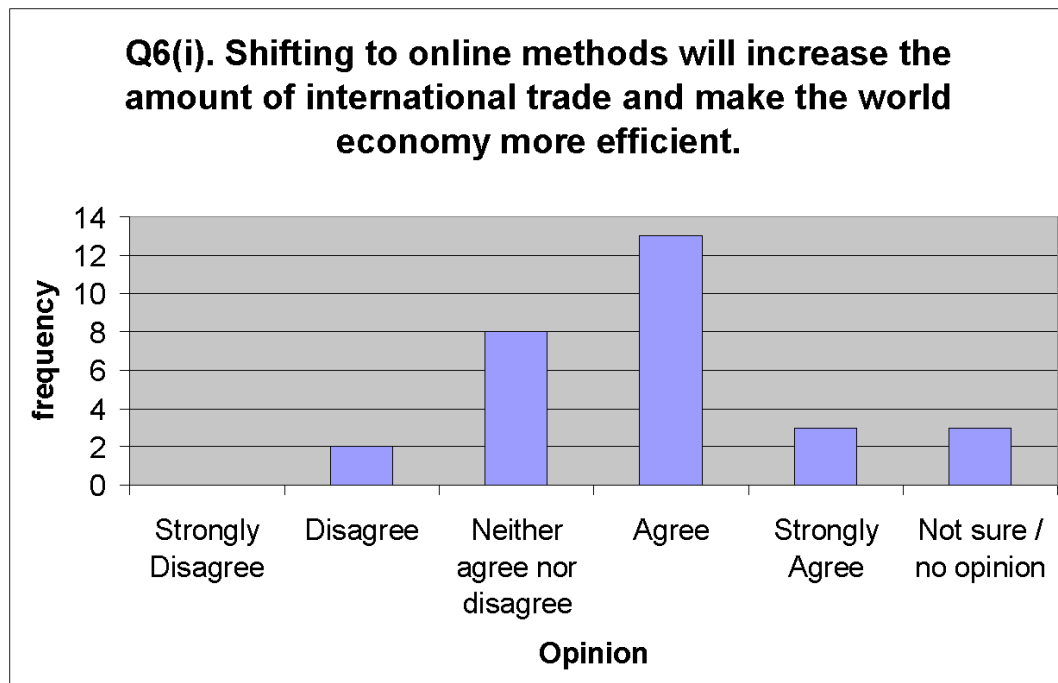


Figure 67: Q6(i) “Shifting to online methods will increase the amount of international trade and make the world economy more efficient.”

Many respondents agree (n=13) with the statement that online methods will increase world trade by improving efficiency (question 6(i) Figure 67), but there are also several (n=8) who responded “Neither Agree nor Disagree”. Classic economic understanding of the relationship between supply and demand suggests that if the cost of supply is reduced, for example by reducing the overhead cost of delivery, then demand will naturally increase. The size of such a shift will ultimately depend on the size of any cost reduction. The third round of the survey sought to estimate the size of the cost reduction in the overhead component of trade.

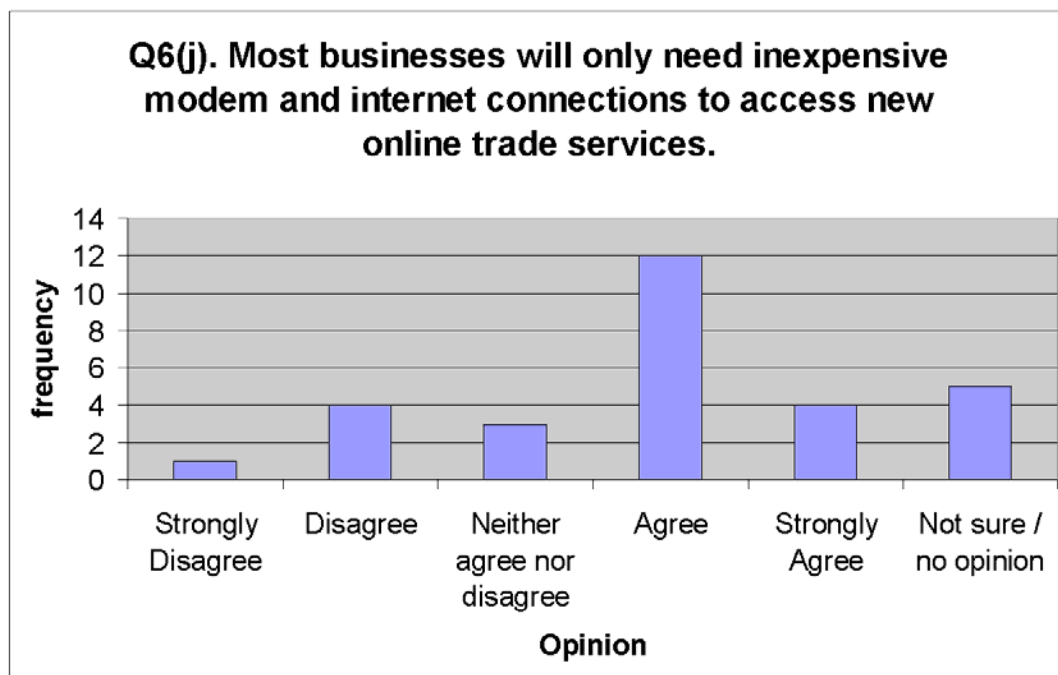


Figure 68: Q6(j) “Most businesses will only need inexpensive modem and Internet connections to access new online trade services.”

Most respondents agree (n=12) that businesses using trade services need only inexpensive Internet connections and the inexpensive hardware to connect to them (question 6(j) Figure 68). This is the expected outcome, as those systems available to businesses today to interconnect with their bank are mostly modem and Internet-based.

5.4. Contentious issues

There were some questions where responses were spread.

Participants in this survey come from three broad groups: 1) academics who research or teach trade finance and/or e-commerce; 2) senior banking staff in international trade finance; 3) experts in the industry other than banking professionals (such as users of trade finance, trade associations, legal practitioners in trade finance, government agencies with an interest in trade finance, system and software providers in trade finance). Perspectives in some cases vary between these three groups. One goal of this study is to identify such differences and bring them to the attention of all to assist in better interaction between the groups. In this section we will look at areas where opinion was noticeably different between the academic, banking, and, industry groups. These anomalies formed a basis for the Round 3 questionnaire.

On most questions there was a general consensus, but on four of the questions opinion was spread, and in at least two of these, the spread was caused by different sub-groups of respondents sharing an opinion which was different to the shared opinion of other subgroups. A caveat here is that the number of respondents is too low to make statistically significant comparisons between the sub-groups, so discussion of comparison below is tentative. Round 3 sought a deeper understanding of these differences.

Here are the particular questions that involved a spread of opinion:

Q1(c) Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents.

The results were spread across the range of choices, but within sub-groups opinion was generally consistent. The variation between groups is shown in the following bar chart. Academic researchers mostly selected “neither agree nor disagree”, banking opinion was split between “neither” and “strongly agree”, and the others (mostly users of trade finance and software vendors for trade applications), mostly selected “strongly agree”. Those who provide the software or who use the financial services have higher expectations for online systems to reduce discrepancies, than bankers and academics, who generally do not expect online systems to provide a panacea for this age-old problem.

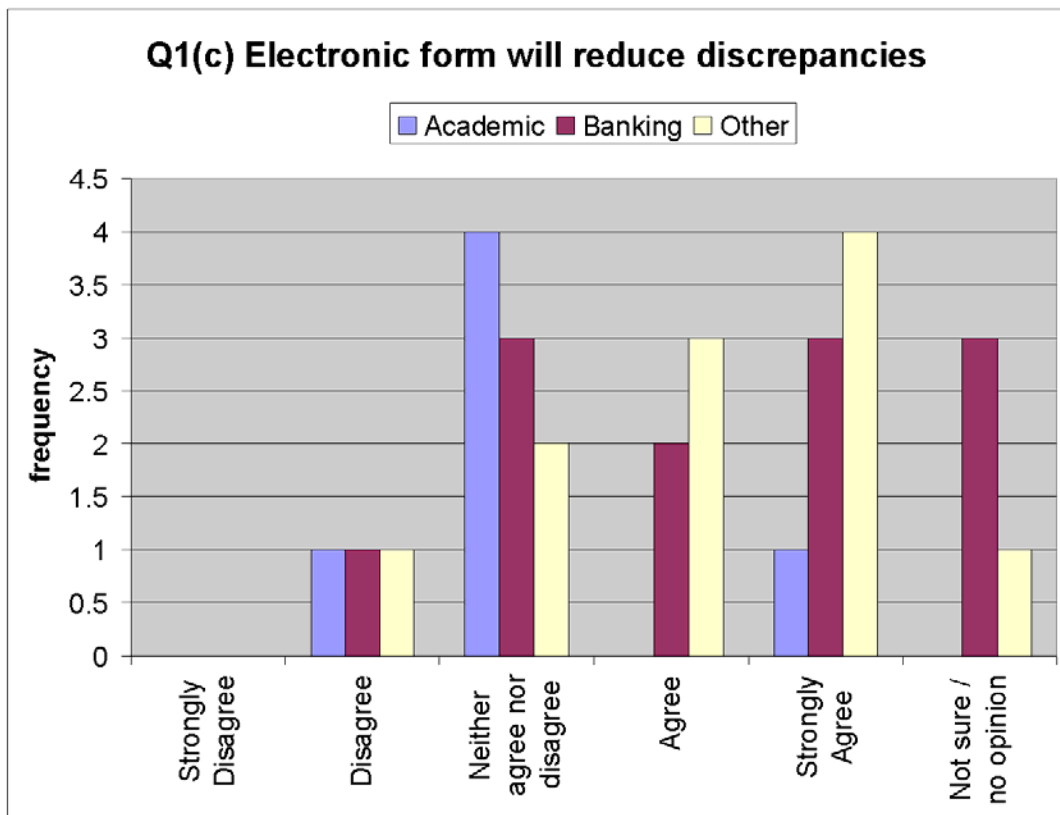


Figure 69: Q1(c) Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents.

The text responses to (question 1(c) Figure 69) suggest that the main reason for uncertainty here is that more evidence is needed before we assume automatic systems can deal with discrepancies. The example was given of SWIFT’s MT700 message which contains a description of text and documents, while its free-form text makes automated discrepancy checking difficult. Respondents were asked for further comment in the Round 3 questionnaire.

Q1(d) Electronic authentication and verification will improve security and reduce fraud against banks.

On question 1(d) (Figure 70, below) the opinion was again spread, even within sub-groups. Academic opinion was particularly divided. The variation between groups is shown in the following bar-chart. As with the previous question it seems there is not yet enough evidence that automated systems will make a big difference to fraud. This should clarify as systems mature. Text responses raised concerns about hackers or crackers and the regulatory compliance requirement to “know your customer”. Respondents were asked for more detailed comment on this issue in Round 3.

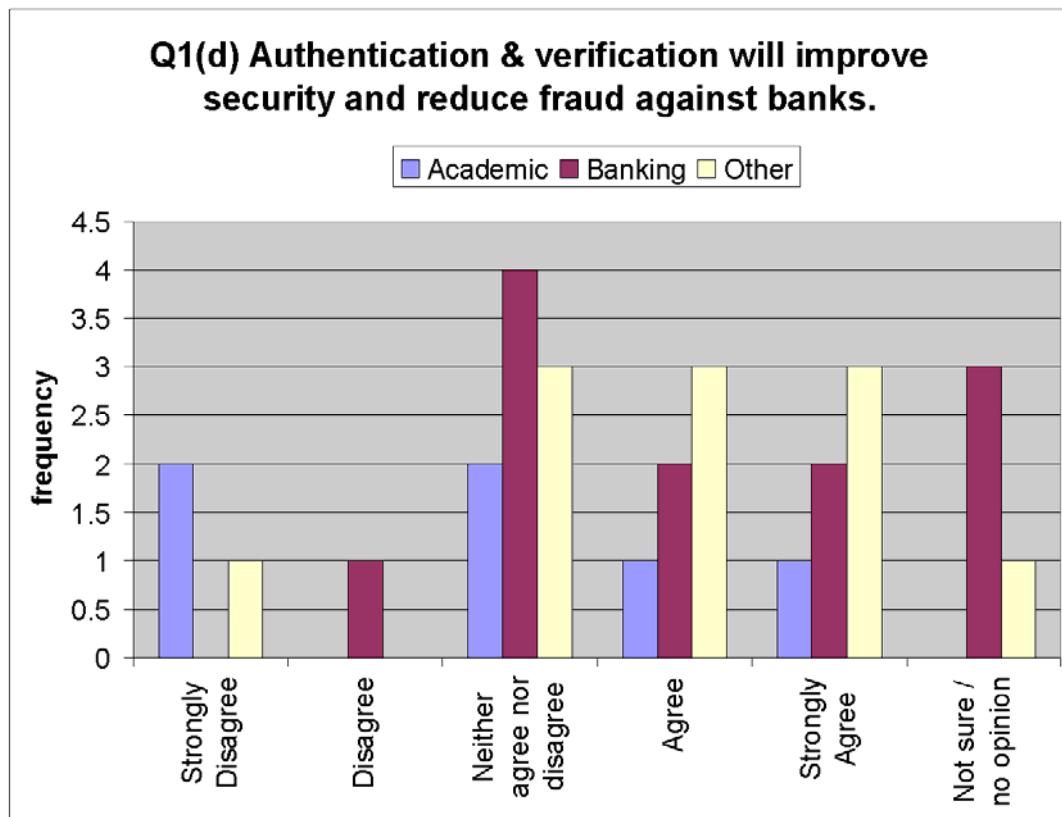


Figure 70: Q1(d) Electronic authentication and verification will improve security and reduce fraud against banks.

Speculating on these differences: banking and user groups may be more confident than academics of a reduction in fraud due to a frustration with the existing paper-based methods they use day to day. They see not just less tedium, but better efficiency in replacing these manual tasks in their back offices.

Q2(f) Cost of dealing with fraud.

Responses to question 2(f) (Figure 71, below) again suggest different perspectives from the sub-groups of participants. The responses of each sub-group are shown alongside the others in the following graph. Bankers expect little change in the cost of dealing with fraud, while academics expect a large decrease and the others favoured a small increase in the cost of dealing with fraud. Speculating on these differences: perhaps the academics, with a good understanding and respect for of the cryptographic measures underlying changes to fraud prevention, are more optimistic than bankers who have dealt with innovative fraudsters over decades and suspect the criminal mind with a will, will find a way. Users of trade systems might be cautious about the cost of additional processing needed to implement fraud prevention methods.

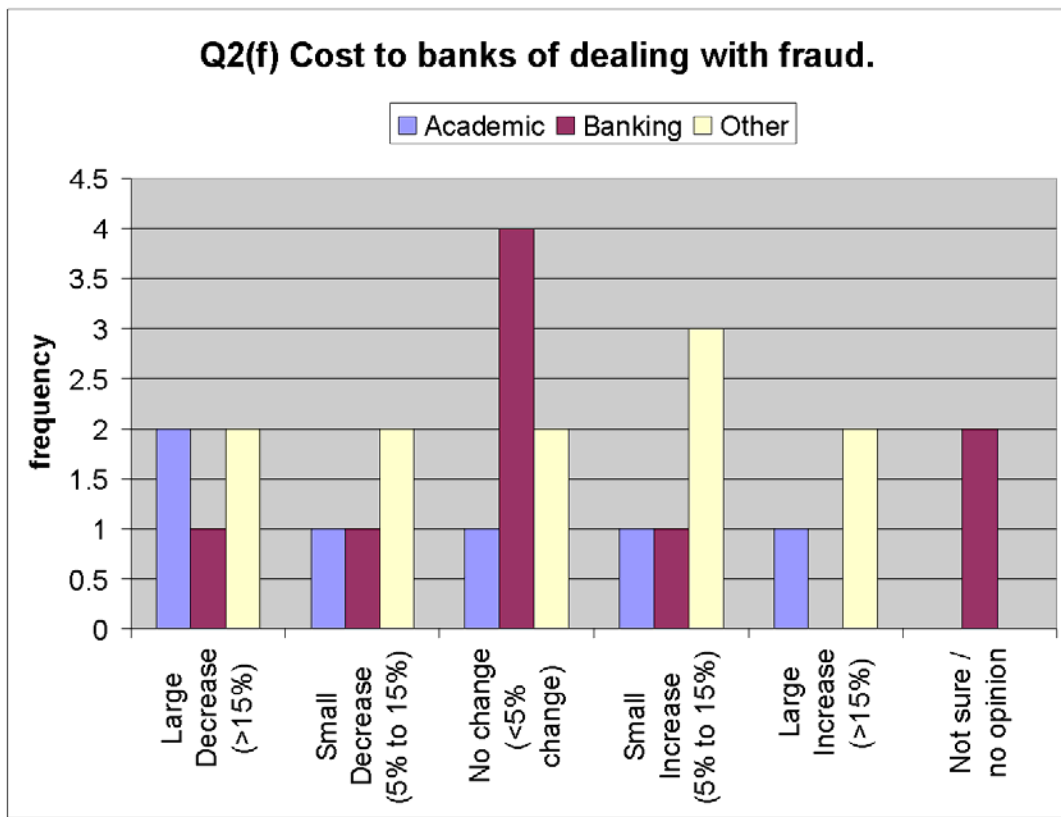


Figure 71: Q2(f) Cost of dealing with fraud.

There were no text responses to this question. The issue was raised again in Round 3 to seek clarification.

Q3(g) Counterparty verification / authentication costs to users of trade finance.

As shown in the following bar-chart (Figure 72) comparing sub-groups responses to question 3(g), bankers expect the user’s cost to decrease. However, opinion is spread among the academic respondents, the users themselves and others in supporting fields.

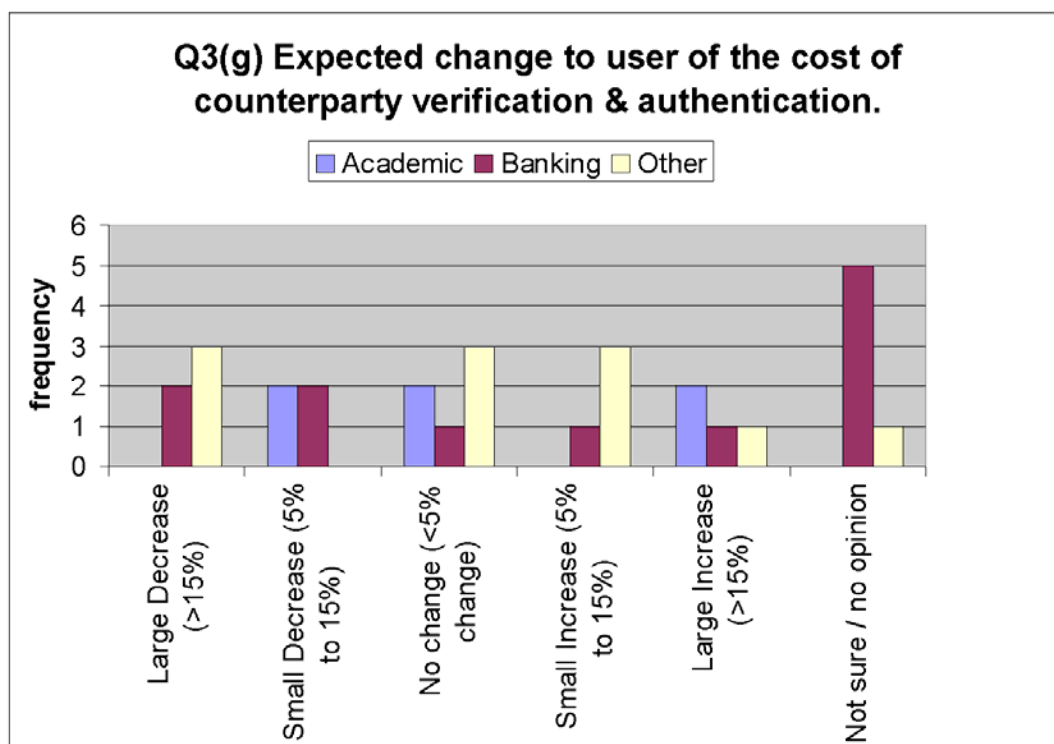


Figure 72: Q3(g) Counterparty verification / authentication costs to users of trade finance.

There were no text responses to this question. Comment was sought in Round 3.

5.5. Round 2 – conclusion

The Round 2 survey took the core players, costs, risks and requirements identified in Round 1 and found good consensus from respondents toward responses expected by prediction from theory on most questions. There were some small surprises:

1. Questions 4(f) and 5(f) showed that respondents expect a small increase in the cost of enforcing contracts, for both financiers and users of finance, during the move from traditional paper-based systems for trade finance to online systems. A lag in legal certainty behind change in industry practice was assumed by the researcher?
2. Porter's (1980) theory of competition predicts the consolidation of maturing industries. Respondents in this survey predict consolidation will begin soon, and indeed there is some news of consolidation in the trade press. It seems the maturity of the trade finance industry itself, plus the accelerating effects of technological innovation, are pushing online trade finance into maturing more quickly than competitive marketplaces usually experience.

There was contention on four questions. In two of these (Q1c & Q2f) there was a noticeable difference of opinion between the academic, banking, and finance-users sub-groups. In the other two contentious questions, opinion varied even within sub-groups of respondents. A preliminary discussion of these appears above. These questions were used to initiate the third round survey, and further discussion appears in the discussion of Round 3 responses which appears below.

5.6. Findings from Round 3

The third and final round of the Delphi Study on Online International Trade Finance wrapped up the issues discovered in Round 1 and examined in depth in Round 2.

Round 3 was designed to see if consensus was possible on questions that showed diverse opinion. Documentary discrepancies will probably decline. Fraud by third parties will probably decline. Insider fraud will probably not decline. Operational risk will probably be high as systems are phased in, but will decline over time. Details of these appear below under the heading “Clarifying Issues from Earlier Rounds”. The text of the Round 3 questionnaire appears in Appendix C. Participants’ complete responses to the questionnaire appear in Appendix F.

Round 3 sought to obtain a clearer idea of the size and scope of some of the issues raised in Round 2. Total cost and risk reductions of between 5% and 15% are expected. The details of these appear below under the heading “Clarifying Issues from Earlier Rounds”. These findings support Hypotheses 2 and 3: that is, moving international trade documentation online will

- reduce the total cost of doing international trade business, and
- reduce the total risk of doing international trade business.

A core aim of this research was to formulate, then validate and refine, a model for understanding and predicting the shift in costs and risks involved in trade finance as the industry moves from paper-based to electronic trade documentation. Responses in Round 2 were consistent with a model/tool developed in other fields (operational research and econometrics), that of an “efficient frontier”. This is the model put forward by Berger, Hancock & Marquardt (1996) who proposed a framework for analysing efficiency, risks, costs and innovations in the payments system. Question 5 of Round 3 requested critiques of that model as applied to cost and risk in trade finance.

Respondents' comments suggested support for the model, some idea of how it might apply, and the potential size of shifts we might expect in cost and risk. These outcomes are discussed in the report to participants and discussed in more detail below under the heading "Model Development".

Clarifying Issues from Round 2

Round 3 sought to clarify uncertainties raised in earlier rounds. Appendix C – Third Round Questionnaire shows the exact question text and all of the responses, segregated by panel, to each question discussed below.

The first three questions presented a graph of responses showing divergent opinions on a specific question in Round 2. They then asked for a comment. These comments were scanned for key words. Common themes, based on these key words, were identified. Here is a summary of the resulting themes.

Documentary discrepancies are a major cost driver in the provision of international trade finance. Respondents were shown the graph of responses to Q1(c) in Round 2 and asked what changes they expect in dealing with discrepancies. Most respondents say that online systems will reduce the incidence of discrepancies and improve the handling of those that occur. Reasons for that include improved communication turn-around; reduction of re-typing; and the effectiveness of standards-based approaches (such as XML) to codifying electronic documents. There are some exceptions. Some expect no improvement unless system design and implementation is impeccable, and argue that some discrepancies (such as late shipment) cannot be eliminated by changes to documentation except as logistical process are improved. The use of deliberately impossible terms in credits by those who wish to avoid payment might continue to produce a level of discrepancies. [See the complete list of responses in Appendix F – Round 3 Data].

Concerning fraud, the topic of question 2, respondents were asked to comment in more depth about the responses to Round 2's questions 1(d) and 2(f). They were asked what changes should be expected in dealing with security and fraud. Some have confidence that Public Key Infrastructure and encryption will make fraud more difficult, but there is a suspicion that insider fraud, fraud committed by people misusing legitimate access, will continue and that the methods used to commit fraud will adapt to the new electronic

systems, posing currently unpredictable threats. Three respondents raised the possibility of fewer but more significant frauds being committed. There is a sense of “wait and see” in many of the responses. However, some respondents with practical experience in early adoption report a noticeable reduction in fraud so far.

Expectations about the cost of importers and exporters verifying transactions with counterparties were varied in Round 2’s question 3(g). Comments in Round 3 (question 3) show a move toward consensus that the cost of verifying counterparties will be reduced by online methods.

Several of the questions asked respondents for a “Yes” or “No” on a particular issue (see questions 4(a) through 4(d)).

In an effort to determine if there was a significant difference between the opinions of the different panels (academic, banking, and other), the results were examined for statistical significance. The size of each panel is small and required grouping of respondents into Banking vs. non-Banking: that is the academic responses were combined with those of the non-banking respondents who use trade finance in their work. Non-parametric statistics may be of some use here.

The first yes/no question, “*Do you expect the risk of unenforceability for trade finance systems that operate mostly online to be different to those running mostly on paper documents?*” was cross-tabulated for contingency table analysis as follows:

Q4(a)	Yes	No	
Banking	7	5	12
Non-banking	8	7	15
	15	12	27

The Phi co-efficient was calculated in the normal way⁸ to arrive at $\Phi = 0.05$

Chi squared was calculated⁹ to arrive at $\chi^2 = 0.068$

The contingency co-efficient was calculated¹⁰ to arrive at $C = 0.01$

These low values for Φ and C indicate that there is not a strong relationship between the category (banking or non-banking) and the response given: that is, the groups show similar answering patterns. This analysis is only mildly persuasive as the sample size is

⁸ Φ (phi) = $(BC-AD) / \text{Sqrt}((A+C)(B+D)(B+A)(D+C))$

⁹ χ^2 (chi squared) = $\sum [(o - e)^2 / e]$ where o are the observations, and e are the expected values.

¹⁰ C (contingency co-efficient) = $\text{Sqrt}(\chi^2 / (\chi^2 + N))$

small— in fact, it is only just large enough to meet the *rule of five* requirement for a cross-tabulation analysis. The values are nominal and so Spearman Rank correlation and Pearson’s ρ analysis are not appropriate.

A Chi squared test confirms the correlation variables Φ and C. If we set hypotheses:

- H₀: Response is independent of banking/non-banking category
- H₁: Response is dependent on category

This cross-tabulation has one degree of freedom.¹¹ For an alpha (α) = 0.05,¹² standard statistical tables for the χ^2 distribution give 3.84 as the value for testing hypotheses.

$\chi^2 = 0.068 < 3.84$; therefore we accept H₀: Response is independent of banking/non-banking category.

Other than question Q4(a), the expected values in the cross-breaks were too low (< 5) and so no further contingency table analysis was done on the Round 3 data. The reason for this failure is that for all questions apart from Q4(a) most respondents chose “Yes”. With very few “No” responses, the rule of five could not be met. This outcome of itself, that is, the clustering of results around “Yes” responses, indicates a consensus between the respondents and thus supports the statistical analysis above. Here is a discussion of the responses from those questions.

Question 4(b) (Figure 73) asked about change in the operational risk of trade finance systems that operate mostly online compared to those running mostly on paper. A clear majority of responses, particularly in banking

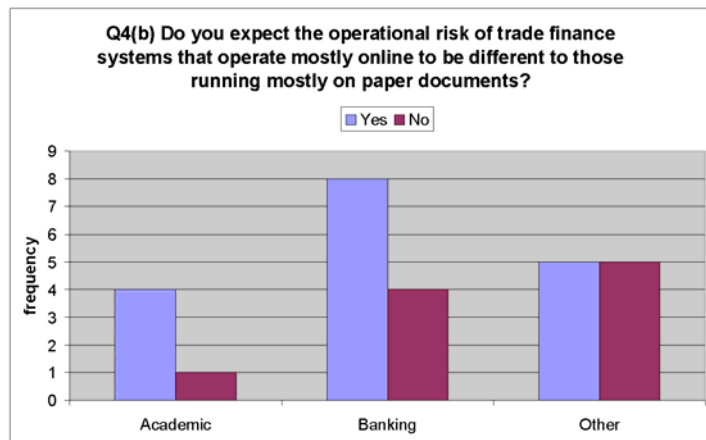


Figure 73: Round 3, Question 4(b) Operational Risk.

and academic circles, indicate online systems will change this risk. A few, particularly among users of trade finance, disagree. Comments tendered on this question suggest

¹¹ d.f = (rows – 1) x (columns – 1)

¹² $\alpha = 0.05$ means a 5% chance of a Type I error (rejecting H₀ when it is actually true).

that new electronic systems will increase operational risk, but there is some optimism that operational risk may reduce over time as systems are de-bugged.

Question 4(c) asked about change in systemic risk. The majority of respondents indicated that this would not change. However, this was weighted heavily toward those actually in the banking industry. Response from academic and non-banking industry respondents was varied. A common theme from those expecting increased risk was the increased speed at which trade finance transactions are completed when performed electronically.

When asked in question 4(d) about an overall rise or decline in risk when systems operate online compared to paper-based systems, responses were spread quite broadly. There was a cluster of responses suggesting a 5% to 25% decline in risk, and a few more either much higher,

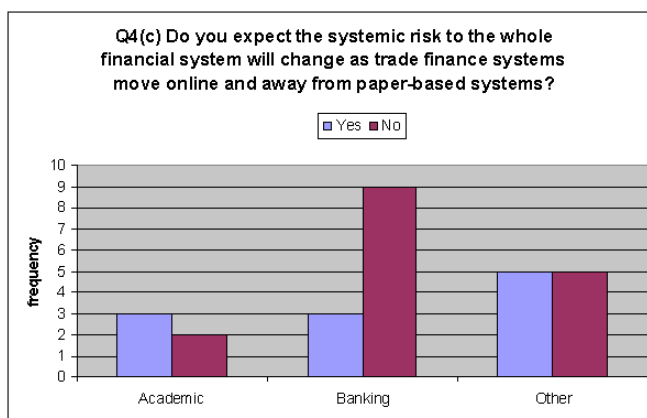


Figure 74: Round 3, Question 4(c) Systemic Risk.

or in some cases indicating an increase. The academic responses were the most scattered and included one comment suggesting that without being in the industry it is probably not possible to make an accurate guess on this. Bank and industry participants who predicted a rise in risk did based on the as-yet-unknown risks of external hackers and insider fraud. This question was, in effect, repeated in question 5e in the context of the efficient frontier model. Responses were once again clustered in the 5% to 25% range, with some that anticipated a much larger decline and a few that indicated no reduction or some increase. Question 5(d) also asked for estimates of the amount of change expected in the context of discussion of a frontier model, overall cost in this case. A decrease of overall cost between 5% and 25% was expected there too. Those who did not expect a decrease in cost did not suggest a figure.

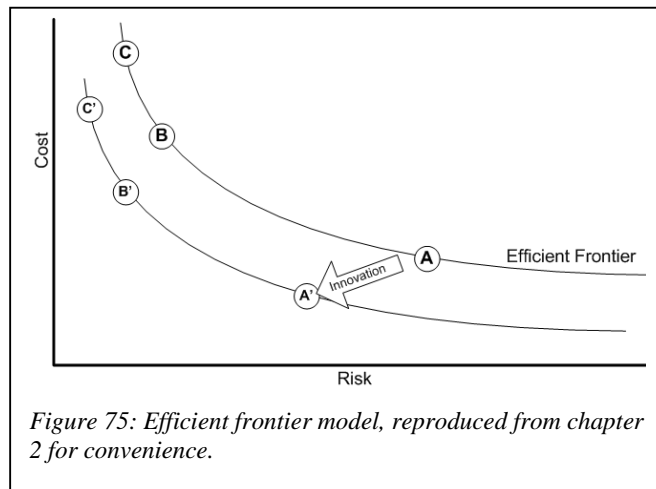
Model endorsement

The background to “efficient frontier” models, based on Edgeworth’s (1881) indifference curves and the extension and application of those ideas to the international

payments system by Berger, Hancock & Marquardt (1996) is discussed in Chapter 2. Question 5 of the Round 3 survey asked respondents about the applicability of this model to predicting shifts in cost and risks in trade finance as systems moved online.

The model has been used for decades in the fields of operational research, econometrics, and some others where there is a need to analyse shifting trade-offs between variables. Many of the responses in Round 2 suggested ideas and issues that led to adapting this model to online trade finance. In particular there was clearly a trade-off between cost and risk: both were expected to shift as systems moved from paper to online, and some systemic changes would move both cost and risk to a new equilibrium or trade-off position.

Question 5(a) presented an explanation of the efficient frontier model, with graphical examples (such as Figure 75), and asked if the model is an effective tool for discussing the effect of online systems on the costs and risks of trade finance.



Comments by trade finance users were minimal, but

banking and academic respondents commented on this question. Several respondents acknowledged the applicability of the model, although there was some dissent. One comment argued that the model was developed for investment systems and might not be applicable to trade finance. However, that was countered by other responses saying the model had broad applicability. The usefulness of the model as a tool was also both acknowledged and questioned. The most serious challenge to the model as a tool for analysing trade finance was the comment that it is limited to cost-driven analysis, and so would not serve to analyse process driven changes.

Question 5(b) asked specifically if the model could be applied to a range of trade finance activities, for example importers and exporters, not just trade finance suppliers themselves. The academic response was positive, but banking respondents were more critical of the model's applicability. Banks already use other measures for assessing risk

and cost and this was described earlier in the paper during the discussion of the Basle and Basle II banking accords. However, it was thought that the model could be useful for analysing cost and risk tradeoffs for importers and exporters.

The shape of the curve was the subject of question 5(c). The comments received here indicate the model needs to be matured and tested with sufficient empirical data before definitive comment can be made about the shape and slope of the frontier curve.

Questions 5(d) and 5(e) asked for expectations of size of change in overall cost and risk. The responses ranged widely, with figures indicating a reduction of 5% and 25% at the middle of the range for both cost and risk reduction. One optimistic response projected cost reduction of a similar dramatic scale to the cost savings in moving retail transactions online. Other responses were much more conservative. Comments that more empirical data is needed were also made.

In commenting on the model there was general agreement that it is an effective tool for discussing the effect of Internet systems on the costs and risks of international trade and its finance (Question 5(a)). However, respondents aired reservations about its usefulness (Question 5(f)), and its breadth of applicability, and indicated a need for more data. This is fair criticism. The model is useful for conceptual explanation but will not be useful in practice until quantitative values for shifts in risk and cost for specific transaction types can be established. This is an area for future empirical study. What has been established however, is that the model is appropriate; the frontier does shift in the expected direction as electronic methods replace paper-based methods; and the shift is thought to be in the range of 5 to 20%.

Competitive effects

Comments were made in Round 1 concerning competitive effects on a shift to online trade finance systems. Changes to the competitive environment are also anticipated by the theory of Malone, Yates & Benjamin (1987). These effects were explored in Round 2. Some further ideas on competitive effects arose from

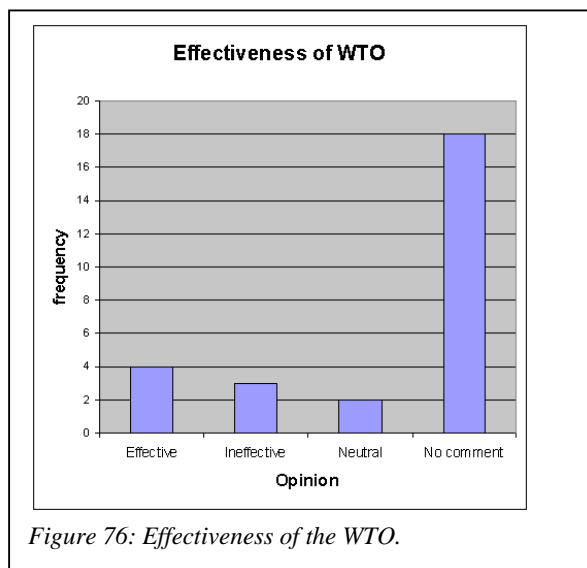


Figure 76: Effectiveness of the WTO.

Round 2 and these were explored in questions 6(a) and 6(b) of Round 3. They dealt with expectations of regulatory change, and the accessibility of trade services to small importers and exporters.

Question 6a dealt with participant suggestions in Round 2 that we can expect substantial additional regulation and taxation of trade. When this was raised in Round 3 opinion varied, but some common ideas emerged: regulation is already increasing to deal with control issues and terrorist threats, and, terrorism may even have a bigger impact on trade handling than a move toward online systems.

Please see Figure 76 concerning the effectiveness of the World Trade Organisation (WTO) as a reducer of tariffs and other restraints on trade, nine respondents commented. Four were optimistic that the WTO will be at least partially effective in achieving its stated aims of reducing government impediments to trade; two made neutral statements; and three respondents (two in banking and one academic) believe the WTO is not effective. One of the negative comments cited lack of enforceability as the reason for doubting the WTO’s effectiveness. One of those with a positive view of WTO’s role cited China as an example of WTO’s effectiveness. Most respondents chose not to comment on the effectiveness of the WTO. Given their expert roles, respondents would be very familiar with the complementary roles of the WTO and World Bank, and their decision not to comment suggests neutrality on the question rather than a lack of opinion. The low response rate for this point indicates judgment should be reserved.

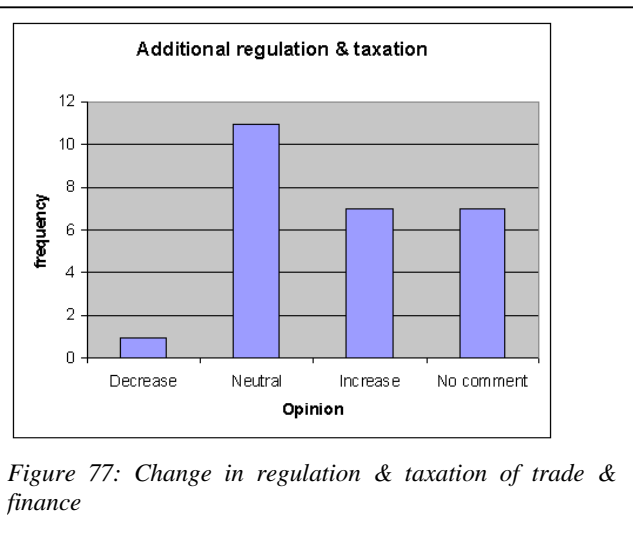


Figure 77: Change in regulation & taxation of trade & finance

Question 6(a) asked for opinion on the comment made by some respondents in Round 2 that change in trade financing would provoke increased regulation and taxation of trade and trade finance. The responses to this question were surprising. One might expect governments to reap the economies and other rewards

of automation just like other participants in trade, and pass on some of the savings either in decreased taxation and more automated compliance measurement; or that the impact

would be neutral. The modal response was neutral but there were also several comments (n=7, please see Figure 77) suggesting that regulation, and particularly taxation of trade and trade finance, will increase. The comments ranged from cynical (“the world’s politicians are all of the same rapacious breed, ...” and “I believe the governments will want to milk this cow ...”) to resigned (“only the customer will pay the difference...”) and “I accept that there will be an increase in taxation and regulation, but I suspect this will be outweighed by the benefits of online systems”). Of those that commented on additional tax burdens on trade, three specifically stated that the gains would still outweigh the additional imposition.

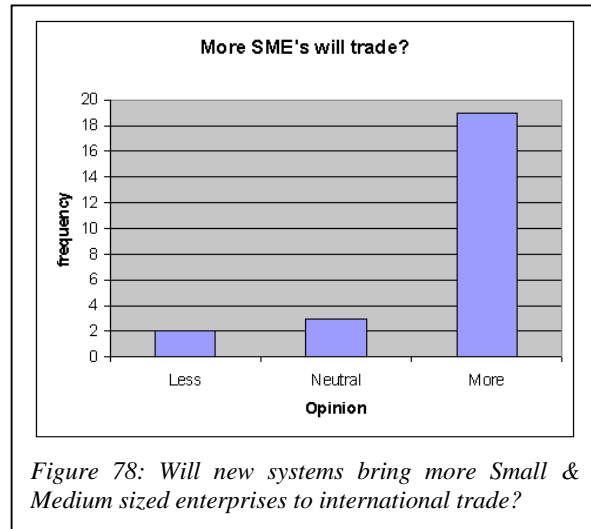


Figure 78: Will new systems bring more Small & Medium sized enterprises to international trade?

Question 6(b) asked if Small and Medium-sized Enterprises will find it easier and more attractive to trade using electronic systems. Most respondents thought that a move to online systems will reduce barriers to entry for SMEs with an interest in exporting or importing (please see Figure 78).

This could lead to further changes in the trade finance product mix and product pricing. Combined with ready visibility for SMEs via the Internet, and difficulty in determining how big a vendor (or buyer is) over the Internet, we may well see a substantial increased presence of the SME sector in international trade. Authentication and credit risk assessment will be even more important as this occurs. One respondent suggested that increased entry of Small and Medium Sized sellers to international markets is likely to spawn additional online services aimed at assisting buyers with information search, much like the existing resellerratings.com in the US; this would further promote international trade by small exporters. Other expected outcomes are further standardisation, and eventually consolidation in some markets as larger players obtain the benefits of process efficiencies that allow them to be more competitive. Some comments sum up these expectations: “Expect world freight volumes to grow significantly during the next boom because of Internet visibility and large importers streamlining their supply side business connections”; “Never before has an individual

been able to advertise his goods and services to so many people at such a small cost. The anonymity of the system will make it difficult to judge the size of entities involved in international trade”; and, “The technologies involved are well tuned for accessibility and ubiquity”.

5.7. Exit Survey

A summary of final round responses was sent to all respondents with the request that they also respond to an exit survey. The exit survey was available online but also sent on paper with the printed summary of round 3. An addressed envelope was included with a suggestion that respondents either return the printed exit survey or take the online version at the same web-site as the three surveys already taken. About 30% of the survey participants responded to the exit survey and, while almost all responses up to that point had been via the web form, about half of the responses to the exit survey came by postal mail, that is, on paper.

The exit survey asked for comments on the good and bad of the survey and asked if future contact was desired. The specific questions are shown in Appendix H – Exit Survey.

Comments on useful parts of the survey process were very diverse but not specific. They included: “risk”, “cost”, “fraud”, “discrepancies” and “banking”. There were no replies to the question, “what parts were not useful?” Under changes and improvements several items were mentioned, but all had the characteristic of being additional topics of interest rather than changes. These involved standards and interoperability, electronic documents, slow adoption of new systems, and the development of SWIFT. Those who responded to the exit survey wanted to share ongoing contact, generally by e-mail.

5.8. Findings from discussion forum

The PHPBB web-based discussion forum software has been very effective in coordinating active animated discussion for teaching. In a university teaching environment, a discussion forum allows multi-way asynchronous communication, that is: teacher, student, and others in the class can post at any time and receive responses from the other participants at any time. This tool should be ideal for this project, as participants are geographically dispersed and working in different time zones. It was initially thought that an interaction between peers and with people in related fields, as

well as reminders about the forum in every communication, would be sufficient incentive to generate active discussion in the forum.

Some explanatory comments and eight questions were posted at the same time as the first round questionnaire was released. The questions delved a little deeper than the first round questions. Although the forum statistics showed a fairly high read rate on the early posts, there were far fewer posted responses than anticipated. Discussion on the low participation rate is included in the discussion of what was posted below.

The following question text was posted:

Several systems are already well known: Bolero.Net, E-Tad, Identrus, Orbian and TradeCard for example. But there are a few others, in particular regional systems, or those that link customers to the back-office of a bank for later traditional processing. JPMorgan/Chase's TradeDoc comes to mind, as does National Australia Bank's Online Corporate – International Trade service. Can you identify some of these other systems? Ideally with a web-page reference to more information about each one.

The following responses were received from a third-party software vendor and a bank:

The Global Trade Portal from Paris-based electronic solutions provider NEOMAlagic is one of them.

Interfaced with the Trade Finance back-office system of the bank or stand-alone, it is an integrated electronic banking solution for banks willing to offer their corporate customers a full-featured Internet-based console for the on-line management of Letters of Credit, Documentary Collections, Financing, Guarantees and their underlying documentation (document preparation, eUCP).

It is used by international banks such as BNP Paribas and Credit Lyonnais to power their on-line Trade Finance offering for their corporate clients.

and,

For example, Credit Suisse recently launched a fully integrated online front-end system for their customers. The system is already based on BoleroXML allowing to re-use the data stream for future electronic processes. More information is found on the website: www.credit-suisse.ch/business.

Attempting to draw the discussion toward concepts behind products rather than merely products themselves the thread was extended by the moderator as follows:

Thanks for that example.

How far is this (and other) product(s) able to go in automatically integrating the payment with the title - that is, do these products assist in avoiding (or resolving) discrepancies between terms of payment (traditionally specified on a documentary credit) and electronic (or other) documents tendered for payment by the exporter?

This response was received:

There are several features involved in attempting to solve the issues and requirements which you are listing. I'm trying here to split them in two questions:

Does such an electronic banking tool provide a way to reconcile payments with the original documentary credit?

Generally yes, by offering the exporter or importer a full historical view of the events that have occurred during the life of the documentary credit. It should therefore include partial and full payments, as well as a clear reminder of the original payment terms (indeed part of the LC), this will tentatively assist the trade participant in avoiding discrepancies related to the payment mode.

More generally than just for the payment terms, does such an electronic banking front-end dedicated to Trade Finance avoid discrepancies between original LC terms and actual documents presented?

The answer is no, and yes...

No, because such tools first want to provide an answer today to the client-bank relationship, whether on the import or export side, and whether the other party is already going electronic or not. And unfortunately, doing automated checking of discrepancies between an electronic LC and paper-based documents is still just a dream, despite the ongoing advances of optical character recognition (OCR) software. Even the documentary credit itself, transmitted between banks via SWIFT MT700/701 messages, does not offer more than an unstructured free format text area to describe the documents required (tag 46A). It is therefore quite difficult for the online Trade Finance system to provide more than just reminders of the terms, leaving the actual checking to the human eyes.

And yes, because some tools, such as the Global Trade Portal, also provide document preparation features. They typically provide the exporter with the online capability to prepare the commercial invoice (or certificate of origin, or packing list, etc.) directly from the details of the documentary credit. This not only avoids the heavy re-keying of data but also ensure that the invoice shows the details expected in the original LC. Add the capability to pretty-print those documents and/or present them electronically to the negotiating bank with eUCP in mind, and you solve some of the underlined issues.

What we see from this thread is that responses are thoughtful and in depth. The quality of content is better than the short answers in the questionnaire. That is probably because the questionnaire questions, while open ended, were more focused. However, very few participants chose to post on the forum. Perhaps the participants were not sufficiently comfortable with online discussion to engage in this medium. If so, the usefulness of the medium for research might change over time as experience in online discussion becomes ubiquitous. Alternatively, the lack of participation may indicate the method is limited, or not sufficiently developed for use in discussion of this type, or that these people were too busy to use it.

The invitation letters, the announcement of each round, and the follow-up reminders by post, fax and e-mail all recommended viewing and posting to the forum. When posts were made they generated an automatic e-mail to the moderator, myself, who posted responses to each post within a few hours. This is about the level of promotion that has previously been effective when the same forum software was used for teaching undergraduate classes on e-commerce, although in those cases the students involved also had weekly personal contact with the moderator and a small part of each student's grade was also at stake when students were asked to post. The discussion forum in the case of the international trade survey was a secondary part of the study and the "bolted on" nature of this component might have devalued it in the eyes of participants.

It would seem then that the participation level might be higher with a professional group, given sufficient incentive, and if a more direct, frequent, and personal promotion of the site was used. Further, if the forum was the central focus of the study, as distinct from an adjunct to a survey, it might receive more focus. The richness of responses when they are made would justify the effort.

The observations above can be tabulated to compare traditional Delphi technique with questionnaires and the threaded online discussion forum as follows:

	Timing	Richness	Rigor	Operational Complexity
Questionnaire	One shot.	Multiple specific questions.	Well established methodology.	Low.
Delphi	Few questions over 2 to 4 rounds, typically 3.	A few, typically open ended, questions with higher specificity in successive rounds.	Well established methodology.	Medium.
Threaded discussion forum	Multiple threads each with multiple responses over time.	Multiple open ended questions, evolving to specifics over time.	Unproven, but receiving some positive comments from researchers.	Medium-High.

Table 3: Comparison of Delphi and online discussion to questionnaires.

The online threaded discussion forum promises interesting possibilities. Methods for maintaining focus and methodological soundness need to be explored. But in time, this method may prove to be a source of rich detailed opinion and rival the questionnaire and Delphi for exploring new fields in search of expert opinion of emerging trends. In particular as potential survey respondents gain experience with online discussion fora, they may become a rich medium of qualitative data. The discussion forum established for this research remains open to facilitate ongoing collaboration and research.

Findings from Expert Interview

After the final round of the Delphi study was synthesised and reported to respondents, a meeting was arranged with the Perth-based Western Australian state manager of international trade finance and a senior business banking advisor from a large Australian-based international bank. The state of Western Australia is Australia's largest exporter of minerals such as iron, nickel and gold, and one of the largest exporters of agricultural produce such as wheat, wool, beef and live sheep.

The trade finance role is significant for Australian banks in this state. Nevertheless, the corporate headquarters for almost all Australian banks is Melbourne, in the state of Victoria, on the Eastern side of the continent.

The meeting involved a review of the trade finance services offered by the bank in question and a discussion of the new technologies for trade finance being introduced to banking around the world and also those specific to south and east Asia, which provide most of Australia's regional trade. The bank representatives indicated that apart from some internal computer systems designed in-house to assist staff handling trade finance documentation, systems used by the bank are primarily paper-based and manual, in particular the handling of letters of credit and the documents presented against those credits. The bank representatives were familiar with the major innovations to trade but only at the level of brand recognition. They acknowledged that these innovations had not been rolled out to the state branches for day-to-day use, and in fact were only in experimental and developmental use at corporate headquarters. They were not at liberty to discuss the extent of development because of corporate confidentiality, but their comments regarding competitive intelligence were that other banks operating in Australia were also experimenting and developing, and that the major innovations being discussed in this thesis are not yet in day-to-day use in bank branches in Australia.

Given that major electronic innovations to international trade finance are in the early adoption stage, the recommendations given in the following chapter may prove helpful and timely.

5.9. Conclusion

This chapter has laid out the findings of the three round Delphi survey and other discoveries arising from the research method, including the use of electronic methods in the data collection and for on-going discussion via a forum. The following chapter concludes the thesis by making recommendations, recognising limitations inherent in this research, and discussing potential further research that follows from this work.

6. CHAPTER 6 – CONCLUSION

6.1. Contributions of this research

As seen above, this research has verified theoretical expectations by collecting, collating and analysing expert opinion on the near future changes to international trade finance that will be engendered by the shift from paper-based to online trade finance methods. That shift is known in the trade as “de-materialisation”. From polling experts and practitioners in the field, ideas were collected for consideration. The results of the surveys were sent back to the experts for critique, refinement, and additional ideas with greater depth of detail. Each of three rounds produced insights of increasing depth and specific observations, and recommended approaches for different groups in practice. A model for discussing this field using an econometric approach was also put up for critique.

This research found that theoretical expectations drawn from Malone, Yates & Benjamin (1987), Evans & Wurster (2000), and Berger, Hancock & Marquardt (1996) do apply to the field of trade finance, even though these had previously only been empirically observed in the context of domestic trade and e-commerce systems.

In particular, Malone, Yates & Benjamin predict a shift from hierarchy-oriented to market-oriented production: that is, a shift from internal control of production toward a greater use of services and resources outside the firm. What can be seen from this survey is that medium and even small importers and exporters are expected to enter international trade markets previously only occupied by large importers and exporters. It is also expected that all sectors will use electronic network-based services operated by a wider range of service providers than banks. There is evidence that in an attempt to avoid being sidelined, the banks themselves are leading in the provision of these external services by creating joint ventures to provide them, such as Bolero and Tradecard. This is an established strategy for banks, which used a similar approach in developing SWIFT. A practical shift in the boundaries of the firms participating in the market for international trade finance, with joint ventures and some new entrants, that confirm these theoretical expectations for structural change.

Evans & Wurster (1999, 2000), commenting primarily on domestic commerce, predicted extended reach: essentially, availability of product to a wider range of buyers; and increased richness: additional features, as service provision moves from atoms (physical, tangible products) to bits (electronically constituted and delivered products). This expectation is also confirmed in the field of international trade where availability and product feature have both increased and paper-based trade and trade finance products, such as purchase orders, invoices, letters of credit and bills of lading have dematerialized to network-based and database-based products.

Berger, Hancock & Marquardt (1996) recommended an efficient frontier model for analysing risk and cost in payment systems. This study confirms that model as a useful tool in evaluating change in the field of international trade and trade finance.

The use of the web for gathering qualitative data over several rounds from dozens of participants around the world was found to be highly successful. This adds to the growing weight of evidence that web-based surveys are at least as practical as paper-based surveys for collating opinion over a wide geographic area. The use of an online discussion forum was found to be of only limited additional value as an adjunct to the Delphi method opinion gathering.

Along with the confirmation of theoretical expectations, there were some detailed insights that arose from the expert opinions. These were fed back to the panels for critique and more detailed comment. In examining these detailed qualitative responses from experts, some specific recommendations were identified for participants in the field of international trade and trade finance. These recommendations appear below.

6.2. Adoption of electronic trade and trade finance innovation

“The landscape for a new era in interorganisational information sharing is firmly within our grasp.” (Nelson & Shaw 2004). Nelson and Shaw make this claim after surveying the adoption of Inter-Organisational Systems (IOS) innovations in 2003. What we appear to be witnessing in IOS for international trade is the approach of a “tipping point”, a point along the path in the diffusion of innovation (Rogers 1995). This is the point at a large percentage of potential adopters follow a trend set by trusted opinion leaders. Even those potential users that are skeptical about an innovation must seriously consider adoption at this point in order to partake of the economic benefit available to

adopters but not available to non-adopters (Rogers 1995; 265). Thus a common theme pervades the following recommendations.

Gartner Research (Klappich 2005) recommends exporting companies formulate strategies around what they call “global trade management” (GTM) because “most global trade activity is underautomated”. Klappich observes that “Global trade management is a fragmented, rapidly evolving emerging market, with multiple solutions needed to assemble a complete GTM portfolio”. This is entirely consistent with the findings in this thesis.

Early adopters are likely to receive a brief “first mover” advantage from adopting new and dematerialised trade and trade finance methods. At some time in the near future pressure to adopt will rapidly increase, and those that delay will lag behind in reaping the economic value added by these methods. In some sectors such delay could challenge the survival of lagging businesses through lost efficiencies in low-margin competition.

Those considering adopting new trade and trade finance systems face similar barriers to the pioneers of earlier incarnations of Inter-Organisational Systems. These were reviewed in Chapter 2. Not only have most of these barriers now been reduced, there are specific factors about new IOS solutions that make them considerably more attractive than earlier incarnations such as EDI. Nelson and Shaw (2004; 265) identify for example:

- Focus has shifted from supply chain (regional) solutions to global supply chains;
- Breadth of trading partners has move from predominantly large businesses to availability to small and medium sized enterprises as well.
- From covering only about 10% of business to business functions, newer systems enable close to 100% of business to business transaction-types.
- Processing frequency has moved from batch to real-time;
- From proprietary VAN interconnect networks, secure systems operating over the Internet improve the cost and accessibility of interconnect to all businesses.

Thus while being a late adopter of IOS technologies has been the default, safe and often most cost-effective approach in the past this is rapidly changing to a risky and harder to justify position. Organisations from small to large must reconsider the adoption of IOS technologies for trade and trade finance if they have not already begun.

6.3. Recommendations for specific fields of industry

Synthesis of the expert opinion given in response to the surveys, in particular to Rounds 2 and 3, lends itself to providing advice to practitioners in the sub-fields of the international trade finance industry. Here are suggestions that arise for people in banking, import, export, and regulatory fields of trade.

Banking

A critical part of banking is the business of information delivery, specifically financial, monetary and risk information delivery. New online approaches to this part of the business create both opportunities such as process efficiencies, and threats from competitive players that adopt new financial information service delivery quickly. Banking strategists need to re-evaluate their businesses to assess these issues.

Standards are vitally important when choosing products because all of these systems are inter-organisational. That is, internal banking systems connect with electronic systems at corresponding banks, at customer sites, and at regulatory bodies. Bank systems that do not work well with other systems on the market risk leaving the user “out in the cold”. Banks need to be actively involved in the international standards development processes for the same reasons.

The initial costs of implementing online trade banking, in the banking sector, are high. Costs of this type however are not entirely without benefits. As well as the new functionality received through such an implementation, there is also potential gains in system responsiveness, and reduced cost containment and risk of failure through preventative maintenance that occurs alongside a normal system integration (Gable Chan & Tan 2001).

However, the competitive environment will demand the investment be made, at the risk of quickly losing business to competitors that do adopt the technology. All large banks and most medium sized banks have joined consortia to provide e-commerce service infrastructure. This shared ownership reduces competitive risk, and also ensures that systems developed are compatible with all stakeholders. Staying out of such consortia is a competitive risk to any bank which could at best become a second-tier service provider, reselling through a bank which is a consortium member.

Substantial cost savings from electronic systems are available, but only if these new systems are tightly integrated with other internal systems, for example via Straight Through Processing (STP). Using electronic systems in a fashion similar to facsimile (fax) documents, i.e., receive and print, or re-typing data into internal systems, will provide no advantage to banks or their customers.

Documentary fraud by external third parties will probably reduce, and possibly be eliminated by the high security of digital certification and secure transaction systems. Early adopters are reporting noticeable improvements in this area. However, the risk of fraud that originates within trade finance organisations might not be reduced. Further, an over-confidence in the security offered by new technology will leave an institution vulnerable to the misuse of authorised systems, enabling classic insider fraud such as payments, including cross-border payments, to personal or third party accounts. Best practice policy in training, authorising access, and in the prevention of collusion will be absolutely vital to limit insider fraud.

The requirements for fraud control and the need for systems integration mentioned above make it essential that implementations of new systems, and their integration with existing systems, be very carefully planned, designed, tested, implemented and monitored, with audit and control being a core focus at every step. This may seem obvious, but it is even more important than in the past because earlier large systems developments were typically implemented under the control of and in the context of a single bank or organisation. The new systems are inter-organisational, and so control is shared, and transactions enter one organisation that originated in another. Further, authorization is often automated rather than manual so the opportunity for human oversight is reduced.

Banks may wish to consider promoting their trade finance products to a broader market, given that cost and access will lower barriers to entry for Small and Medium sized Enterprises wanting to trade internationally. Predictions of a rush of SMEs to new electronic marketplaces have been made for several years without substantial up-take of electronic offerings. Reasons for SME reticence have been identified as initial cost; complexity; and, ignorance of the availability of, and opportunities arising from, such systems. However, as cost and complexity barriers are slowly overcome, a marketing push to educate new potential users of electronic trade finance services might yield fruit.

The systemic risk to the financial system of a large inter-bank system failing during its early stages of adoption is quite real. Fortunately, most initiatives in online trade finance are if not owned by, at least very open to, participation by banks during the early stages. It is vital that all banks take an active role in the assessment, monitoring, and supervision of new systems that integrate the banking sector.

Credit risk, exchange risk, Herstatt, and sovereign risk will probably all be reduced by online systems because they: 1) speed up the transaction time, thus shortening the exposure for banks, and 2) often match two way transactions in real time, reducing the risk of any given transaction falling through half-complete.

It is too early to tell how big an improvement can be expected by a substantial move to online finance will yield, but the predictions of respondents are clustered around 5% to 25% improvement in overall risk exposure, and 5% to 15% overall cost reduction, in the overhead cost of international trade transaction processing. Given the figures sited in the introduction (5.3% to 6% of \$USD7.5 trillion per year), potential gross cost savings would thus be of the order of \$USD20 billion to \$USD67 billion per year across the global industry and market. Additionally, risks inherent in trade are also reduced, which with lower cost makes trade more attractive to smaller potential importers and exporters and thus suggests growth in international trade, and further savings as well.

A competitive change that banks should expect is substantial challenges from non-bank financial institutions¹³ for trade finance business. Many new entrants in this sector are owned by consortia of banks, and unaligned banks should seriously consider joining such consortia.

A structural change that banks should expect is a shift of trade finance handling from branches to head office.

Non-bank financial institutions

Respondents predict there will be a shift of trade finance provision business from banks to non-bank financial service providers. This offers a substantial competitive opportunity to non-bank financiers. However, activity to date has involved non-bank

entities that are owned by banks (such as TradeCard and CLSbank), or substantially owned by banks (such as Bolero and SWIFT). Emerging systems are likely to be similarly controlled by banks (such as the WATCH system) or of sufficiently small size to be readily acquired by banks or influenced by banks through negotiations over interconnections to national and international monetary systems. A risk for any given bank, then, is to be left out of any substantial consortium that gains significant market share. The economics of “network effects” ((Rohlf’s 1974) (Liebowitz & Margolis 1998)) suggest that the more banks offering compatible and interconnected services, the more value those services offer to all, and thus exclusion is not a large risk to banks for most online international trade services. Banks that wish to join such a consortium will in most cases be welcomed.

Online services that are complementary and even those that compete with other services are expected to merge as the market matures. This should provide opportunities for more sophisticated service products for all financiers, but will further assist non-bank providers in attracting business that formerly only went to banks.

Importers

Two factors suggest that the cost of obtaining import finance, such as letters of credit, or their electronic equivalents, will fall:

- If the expected internal cost reductions for banks in providing finance and the expected reductions in total transaction risks both occur, then savings will most likely be passed on in part to customers as banks compete to win and hold customers.
- Ease of access and transparency of electronic processes will make it easier to shop around for trade finance. This will place competitive pressure on banks to pass on cost savings in order to retain market share. Some in the banking sector predict the profit will be almost completely squeezed out of trade credits. This is good news for trade finance customers.

Standardisation is essential for the banks so that they can smoothly inter-operate. This standardisation should also make it easier for customers to inter-operate with the banks

¹³ A Non-bank Financial Institution (NBFI) is an “institution which is not a bank as defined by legislation but is involved in finance, such as investment banks, merchant banks, finance companies, building societies, credit unions and life offices. Some, such as merchant banks and finance companies, were often established or acquired

and reduce costs for both parties. Tight integration between existing computer systems and new trade finance systems is not as important to users of trade finance as it is to the banks, but some internal efficiency gains can be made by integration. As with all electronic systems handling money, control and audit are probably the most important factors in such an integration. These issues are all the more important, compared to most existing financial systems, because they are inter-organisational: transactions originating outside a business are automatically injected into a business' internal systems and approval processes are in many cases automatic. A loss of control and audit in this area could be catastrophic for a business.

As systems mature to the point of reducing discrepancies via electronic matching, delays in transaction completion will reduce and delivery times will reduce. As a result the supply cycle will shorten, providing some of the cost and service advantages experienced in domestic Business to Business (B2B) systems. Just in Time and Quick Response systems might be feasible, even with international supply. Smaller inventories can be carried, reducing warehousing and other inventory costs. Credit costs will also be reduced by shortening the supply cycle, as money will be owed for shorter lengths of time.

A popular benchmark for trade finance is that about 80% of international trade is conducted on open account. Additionally it is thought that letter of credit usage is declining. However, China, a very significant trading partner for many countries, shows the reverse. Letter of credit financed trade is increasing there (Garton 2005). According to Bolero (cited in Garton 2005):

... one of the areas of significant change and growth is in the automation of the existing LC process both on the export and import sides of the business. This automation is being primarily driven by large corporate clients seeking to further automate their financial supply chain through standardizing their LC process across multiple banks whilst reducing costs and optimizing working capital.

Importers cannot afford to ignore the significance of the letter of credit for trade payments, and in particular the continuing trend to dematerialisation of this instrument through services such as Bolero and others.

by banks as back-door entry to activities disallowed under tight banking legislation. With deregulation of the financial system, the distinctions between banking and non-bank functions became blurred." (Carew, E. 1996).

Exporters

Exporters will benefit from the improved availability and cost effectiveness of online trade finance because a cost reduction to the buyer provides negotiation opportunity. However, the biggest gains for exporters will probably come from adopting electronic systems that support bill of lading and other shipping and export documents.

Once again, integrating existing computer systems with online trade documentation systems will provide some efficiency gains, but for small to medium sized exporters this will not be as important as it is for large exporters and banks.

Fraudulent letters of credit, bills of lading, and other trade documentation should become rare as digital security measures make counterfeiting difficult. All the same, as with banks and other users, insider fraud can still occur and companies will almost certainly be held liable for unauthorised activity by their staff where fraud occurs. Best-practice internal controls on staff usage of online trade systems will remain essential. Examples include logging and audit trails and separation of responsibilities.

Some online trade systems, such as those based on ebXML and similar systems, will probably afford access to a broader customer base for exporters because they provide a searchable index of potential electronic trading counterparties. The dematerialised letter of credit, as offered by such services as Bolero (see the discussion above under the heading importers) should also be considered an important payment instrument, particularly to offset the credit risk of counterparties.

Regulatory bodies

Audit and control of trade finance systems must become more automatic and reportable as systems are integrated. This will improve the transparency of the business sector and ease the cost of regulatory control.

Government agencies will need to prepare themselves technologically to use new online systems. There will be a substantial push by the trade finance community for government agencies involved in trade to ensure efficient carriage through international ports by making regulatory systems automatic, putting them online, and conforming to international standards of practice in doing so. Countries that fall behind in these

measures risk the loss of trade to competing exporting nations that can more efficiently handle trade with lower cost and risk.

There is some concern from respondents that regulators may “make a grab” for the cost savings delivered by online systems by increasing taxation. Such moves would reduce national competitiveness and harm domestic exporters, importers and consumers by maintaining prices at higher levels than necessary.

It seems likely that bodies such as the World Trade Organisation, the Bank of International Settlements, and others will continue to show a keen interest in the development and implementation of trade finance systems. A supportive coordinating role from these could facilitate a rapid dissemination of the benefits in cost, price and availability of goods, raising world living standards multilaterally.

Of major concern to regulators, and in particular to central banking authorities, is the potential for systemic shock to the financial system from operational failure or large-scale fraud. The widespread and rapid adoption of major innovations to banking systems in a competitive environment provides the potential for one or more dramatic operational failures during the early stages. Financial institutions are known for conservatism in handling change, yet failures are not unknown. Spectacular operational failures are often associated with errors in human judgment such as the collapse of Drexel Burnham Lambert after the “junk bond” trading debacle in the late 1980s and the collapse of Barings Bank due to “rogue trading” in 1995. However, technology is also a cause of operational failure. An information technology systems failure in Danske Bank (in Denmark) in March 2003 put foreign exchange, equity, bond and money market trading, and Internet banking systems out of operation for a week. This caused payment delays for domestic customers, but the operational failure at Danske Bank also had an impact on banks in other countries, such as Fokus Bank in Norway (a subsidiary of Danske Bank). The London Stock Exchange cancelled the massive Taurus project shortly before it was expected to go live. Sweden’s Nordenbank had a computer systems failure in late 2000 which limited customer electronic payments for almost a week. Disruption at EDB Fellesdata (in Norway) limited service for about a week in August 2001. Regulatory supervision of critical infrastructure in the trade finance arena will be essential, and this will require a high degree of technological knowledge and close cooperation with firms installing that infrastructure.

Researchers

This field is very open to new research. As has been suggested, the verification of theoretical models requires quantitative follow-ups to scale the expectations of change and thus form a more precise predictive tool.

Online versions of surveys, even multiple round (Delphi) surveys were found to work very well with geographically dispersed respondents, although multiple reminders were necessary to bring each round to a close.

Online discussion fora for going into more interactive discussion on this topic did not receive much participation, even though frequent reminders were issued to suggest participation. It is possible that a different demographic, perhaps one that is less wary of the Internet as a medium for discussion, would use this medium to good effect for data-gathering.

Work for ongoing research is discussed further below under the heading “Further Study”.

6.4. Limitations

The extensive use of qualitative rather than quantitative methods in collecting and analysing data in this research means that the outcomes are “soft”: that is, the validity of the findings do not stand alone but call for future data collection and analysis, ideally with different methods, to check validity. Purely qualitative methods often also raise questions about the repeatability of the data collection. Nevertheless, the research questions raised in this dissertation are exploratory and thus the investigative approach used here does provide outcomes that are useful guidelines for consideration in business decision making. Those outcomes also suggest worthwhile future research.

Given that the area of online services of all types is moving forward rapidly, both the application of and perceptions toward the use of online systems is changing. Studying any part of this field is like shooting at a moving target, and to repeat findings here would require polling people in the field of trade finance on their recollection of past perceptions. It is difficult to say if such a task would be achievable as recollection itself also changes over time, and even if reliable, such an exercise would probably not be

useful. The value of this research lies in making informed predictions about the immediate future, a service that has only short-term usefulness.

To address the reliability of this research in surveying this transitory effect, consider the results obtained from three distinct panels of trade finance participants: academics, bankers, and commercial users. On many of the questions, opinion differed little between the panels. For those questions where opinion was consistent within a panel but different between panels, further comment was sought in successive rounds. In each of these cases there was a reasonable basis for background-based difference of opinion. On questions where there was a broad diversity of opinion across panels and in follow-up comments, insufficient data was available to make an informed prediction, which suggests that these are areas that require time to mature before we can make useful predictions. This is consistent with the use of Delphi as a predictive tool in all fields, not just in information and e-commerce systems.

A substantial limitation of this research is its precision. The study is an early exploratory investigation into the change wrought on international trade by online methods. The Delphi has been used as a tool for finding the way to which questions: players, costs, risks, requirements and even theoretical models, are useful for prediction in this rapidly changing field. Although the number of participants in the study were sufficient for the Delphi methodology, it was disappointing that only about 5% of those invited to participate accepted the invitation. One can speculate on this response rate: perhaps the researcher is of insufficient stature in the field, or is perceived to be working from a location distant from the centres and hubs of international commerce. However, as discussed in chapter 3, a 5% response rate to a survey invitation is not unusual. Higher response rates accrue to those who have earned significant respect in their fields, and the research is hopeful that his own work will attract a wider interest. The precision of specific predictions, for example an expectation of a 5% to 20% decline in the cost of international trade documentation, and another 5% to 20% decline in the risk of transaction failure brought about by online methods, is quite broad. However, while they are of small use in estimating precise savings, their real value is in encouraging existing importers, exporters, and financial service providers to move quickly to online methods, and to encourage would-be and smaller traders to enter the world of international trade which is expected to be more achievable and profitable under the new online order.

6.5. Further Study

Several research opportunities directly follow from this research project. In particular there is ample opportunity to perform case studies on exemplars of each of the player categories, and there is opportunity to do further predictive survey research with the established expert panels.

Case study and action research methods performed with importers, exporters, banks, transport and logistics companies, and government agencies could provide a multitude of studies to derive strategic planning recommendations on an industry basis or for individual organisations.

These cases would permit the efficient frontier model to be calibrated for use as a predictive instrument for similar firms undergoing transition. For example, an importer using traditional letters of credit could be monitored during the transition to an online solution for trade payments. The costs and risks involved, both in the conversion process, and the average per transaction values, could be evaluated to determine cost savings and to advise on the requirements for insurance and other risk mitigation instruments. Once individual players were examined this way, the values for change in cost and risk could be validated by examining similar firms in each category (import, export, finance, transport, regulatory, and so on). These cases would be explored using an action research methodology, providing both research and consulting opportunities.

Judging by interest shown in the exit survey, many of those involved in the expert panels would be interested in exploring additional areas of trade finance. In particular, it would be useful to collaborate on strategic recommendations and process oriented recommendations to enhance trade and trade finance for all participants.

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APPENDIX A – FIRST ROUND QUESTIONNAIRE

The following is the text of the first round questionnaire. It does not replicate the layout of the web version, which can be viewed at <http://trade-doc.com/Round1>. The web version has radio boxes to solicit choices, textboxes for text entry, and hyperlinks under many of the terms to provide definitions and examples.

Thank you for agreeing to join the Delphi survey of expert opinion on Online Services for Trade Finance and Banking. Your responses to the questions below will be collated with those of other experts in trade finance banking, users of trade finance, and academics working in this field. The results will be returned to you within a month, with the second round of the survey. I hope you will enjoy sharing your thoughts on this topic and will find the ideas from fellow participants valuable.

Background

An array of new services to assist in the financing and conduct of international trade has been introduced in the last three years. Bolero and Tradecard are two examples among several impressive offerings. These services have the potential to substantially change the market: they may, for instance, alter the cost and risk structure of international trade, or change the profitability of users and providers of trade finance. Participants in this study share an interest in the impact that new services will have on international trade and trade finance in particular. This survey aims to assist participants to better understand and prepare for those changes. In the first round we will identify general relationships, and in the second and third round questionnaires we will explore these in more depth. With this background in mind, please share your thoughts on the following questions. It should take about 20 to 30 minutes to complete. Some questions and terms used in questions are linked to a page which clarifies them; click on the [blue hyperlinks](#) to see these.

Note: *depending on your own background and core interests, some of the questions might not be relevant to you. If a particular question is outside your area of interest, please feel free to skip it and move on to the next question.*

ID: Please enter the Survey “Username” you were allocated: _____
(This appears on the Keyboard Template included with the invitation to join the survey or in the confirmation note you receive after registering. If you are registered but do not have the Username at hand please just enter your full name or your e-mail address. I will substitute these details with your username before aggregating the data).

Q1. The introduction of online trade finance services that compete with traditional paper-based letters of credit, bills of lading and other trade documentation will affect

- large international banks, small regional banks,
- importers,
- exporters,
- carriers and freight forwarders,
- government agencies, as well as
- the businesses actually offering online trade finance services.

Are there “players” in the world of international trade, other than those just listed, who will be affected by a shift from paper-based to electronic trade documentation? Who are those players?

Q2. Changes in the way business processes are carried out are bound to alter the cost of doing business. We have identified the following types of cost as likely to change with a shift to electronic trade documentation, at least for some of the players identified in the first question: the

- cost of each payment transaction,
- cost of each carriage document,
- installation costs,
- periodic service charges,
- cost of dealing with irregularities in documentation (such as discrepancies),
- cost of dealing with fraudulent transactions.

Can you identify any other costs that users or suppliers of online trade finance services need to consider?

Q3. What is driving the change in each of these costs?

Costs One or more drivers of change in each cost:

Payment Documents: _____

Carriage Documents: _____

Installation Costs: _____

Periodic Charges: _____

Discrepancies: _____

Fraud: _____

Other costs you identified: _____

Q4. [Question 4 has been removed].

Q5. Various risks involved in financing trade will also change as electronic methods replace paper-based methods. We have identified the following risks as likely to change for some players:

- credit risk (buyer default),
- Herstatt risk (settlement risk of the buyer's bank default),
- currency market risk,
- sovereign risk (loss caused by a government),
- operational risk of a new system failing, and
- systemic risk to the financial system as a whole.

What other risks do you expect to change as we move from paper-based to online trade finance services?

Q6. What is driving the change in each of these risks?

Credit risk: _____

Herstatt / Settlement: _____

Currency / Exchange: _____

Sovereign / Political: _____

Operational: _____

Systemic: _____

Other risks you identified: _____

Q7. [Question 7 has been removed].

Q8. Small and medium-sized businesses (SMEs) will probably have to make some investment in infrastructure to use new online trade services even if their service providers are well-equipped. What network, software, training and other infrastructure do you envision being required by SMEs?

Q9. The questions above ask about changes to risk and cost, and about infrastructure needed to shift from paper-based to online trade finance services. What other changes do you expect to arise from the shift from paper to online? Please consider potential micro- or macro-economic changes such as profitability changes within the banking sector, social or political changes, and any other potential change, even if it is outside the trade & finance sectors.

APPENDIX B – SECOND ROUND QUESTIONNAIRE

The following is the text of the second round questionnaire. It does not replicate the layout of the web version, which can be viewed at <http://trade-doc.com/Round2>. The web version has radio boxes to solicit choices, textboxes for text entry, and hyperlinks under many of the terms to provide definitions and examples.

Thank you for your input in round 1. In this round we go deeper, looking for more detail and direction on issues asked in the first round, and exploring issues that arose from your comments. Here are the questions for round 2.

Note: *depending on your own background and core interests, some of the questions might not be relevant to you. If a particular question is outside your area of interest, please feel free to skip it and move on to the next question.*

ID: Please enter the Survey “Username” you were allocated: _____

(This appears on the Keyboard Template included with the invitation to join the survey or in the confirmation note you receive after registering. If you are registered but do not have the Username at hand please just enter your full name or your e-mail address. I will substitute these details with your username before aggregating the data).

Q1. Some diversity of opinion has come from Round 1 (please see the report and the copy of your comments sent with it). Regarding observations coming from Round 1, please show your agreement or disagreement with each of the following statements. Where you disagree with a statement, please indicate why.

Do you Agree or Disagree with the following statements?

(Each statement below was 5 point Likert-scaled from Strongly Disagree through Strongly Agree, plus a choice available for “not sure / no opinion”). Space was also provided to provide an explanation for the answer.

- a) Electronic documents, processed straight through to back-end systems, will substantially reduce transaction costs for banks. Disagree? Why?
- b) Having documents in electronic form will substantially reduce time delays. Disagree? Why?
- c) Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents. Disagree? Why?
- d) Electronic authentication and verification, will improve security and reduce fraud against banks. Disagree? Why?
- e) Electronic documents, will reduce staff costs for banks. Disagree? Why?

Q2. The first round identified several costs likely to be affected by moving online trade finance online. Please indicate which of these costs are of major importance to BANKS AND OTHER FINANCIAL SERVICE PROVIDERS and by how much they are likely to shift over the next three to five years because of the move from paper to online methods:

(Each cost type below was 5 point Likert-scaled from Large Decrease through Large Increase, plus a choice available for “not sure / no opinion”).

- a) Payment transaction costs (click for examples)
- b) Installation or joining fees (examples)
- c) Cost of re-engineering internal business processes, & training
- d) Initial cost of training (see explanation)
- e) Cost of resolving discrepancies
- f) Cost of dealing with fraud
- g) Counterparty verification/authentication
- h) Insurance costs
- i) Legal costs (see explanation)
- j) Cost of government compliance, taxes, and duties.

Q3. Please indicate which of these costs are of major importance to USERS OF ONLINE TRADE FINANCE (such as Importers and Exporters) and by how much they are likely to shift over the next three to five years because of the move from paper to online methods:

(Each cost type below was 5 point Likert-scaled from Large Decrease through Large Increase, plus a choice available for “not sure / no opinion”).

- a) Payment transaction costs (click for examples)
- b) Installation or joining fees (examples)
- c) Cost of re-engineering internal business processes, & training
- d) Initial cost of training (see explanation)
- e) Cost of resolving discrepancies
- f) Cost of dealing with fraud
- g) Counterparty verification/authentication
- h) Insurance costs
- i) Legal costs (see explanation)
- j) Cost of government compliance, taxes, and duties.

Q4. Please indicate which direction these RISKS will is of major importance to SUPPLIERS OF ONLINE TRADE FINANCE (such as banks and other financial service providers) and by how much you expect them to change over the next three to five years due to the move from paper to online methods: (Each risk type below was 5 point Likert-scaled from Large Decrease through Large Increase, plus a choice available for “not sure / no opinion”).

- a) Credit risk (buyer default)
- b) Herstatt risk (settlement risk of the buyer’s bank default)
- c) Currency market risk
- d) Sovereign risk (loss caused by a government)
- e) Risk of Fraud
- f) Risk to enforceability
- g) Operational risk of a new system failing
- h) Systemic risk to the financial system as a whole

Q5. Please indicate which direction these risks is of major importance to USERS OF ONLINE TRADE FINANCE (such as Importers and Exporters) and by how much you expect them to shift over the next three to five years:

(Each risk type below was 5 point Likert-scaled from Large Decrease through Large Increase, plus a choice available for “not sure / no opinion”).

- a) Credit risk (buyer default)
- b) Herstatt risk (settlement risk of the buyer’s bank default)
- c) Currency market risk
- d) Sovereign risk (loss caused by a government)
- e) Risk of fraud
- f) Risk to enforceability
- g) Operational risk of a new system failing
- h) Systemic risk to the financial system as a whole

Q6. Please indicate how you expect the move from paper-based to online methods for trade finance to affect the competitive environment for services in international trade finance by showing your agreement or disagreement with each of the following statements.

Do you Agree or Disagree with the following statements?

(Each statement below was 5 point Likert-scaled from Strongly Disagree through Strongly Agree, plus a choice available for “not sure / no opinion”). Space was also provided to provide an explanation for the answer.

- a) More new online services for trade finance will soon be offered. Disagree? Why?
- b) New online services will mostly come from (be owned by) existing financial service providers. Disagree? Why?
- c) New online services will provide services complementary to existing online services. Disagree? Why?
- d) New online services will provide services in competition to existing online services. Disagree? Why?
- e) Complementary trade finance service providers will soon merge. Disagree? Why?
- f) Competing trade finance service providers will soon merge. Disagree? Why?
- g) Trade finance business will move from bank branches to head offices. Disagree? Why?
- h) Banks will lose trade finance business to specialist service providers. Disagree? Why?
- i) Shifting to online methods will increase the amount of international trade and make the world economy more efficient. Disagree? Why?
- j) Most businesses will only need inexpensive modem and Internet connections to access new online trade services. Disagree? Why?

Q7. What other competitive effects do you expect to see occur as trade finance moves from paper-based to online methods?

APPENDIX C – THIRD ROUND QUESTIONNAIRE

The following is the text of the third round questionnaire. It does not replicate the layout of the web version, which can be viewed at <http://trade-doc.com/Round3>. The web version has radio boxes to solicit choices, textboxes for text entry, and hyperlinks under many of the terms to provide definitions and examples.

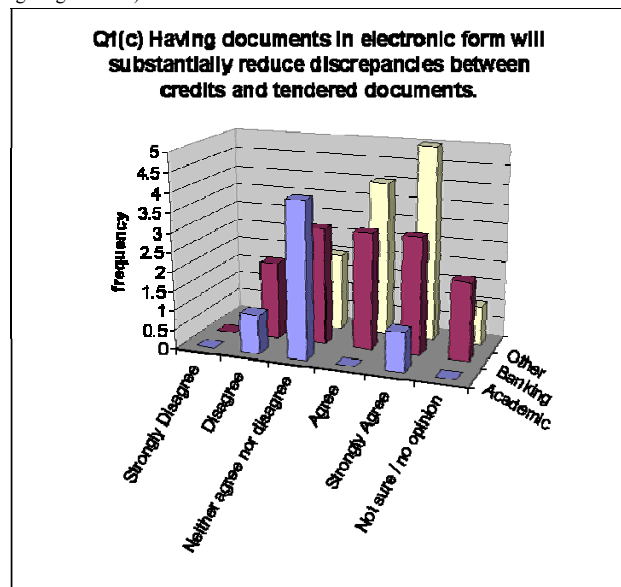
Thank you for your input in round 2. Round 3 is the final round. Here we wrap up loose ends such as seeking consensus on areas of uncertainty in Round 2 and seeking confirmation of a model of the effect online systems are having on international trade. Here are the questions for Round 3.

Note: *depending on your own background and core interests, some of the questions might not be relevant to you. If a particular question is outside your area of interest, please feel free to skip it and move on to the next question.*

ID: Please enter the Survey “Username” you were allocated: _____

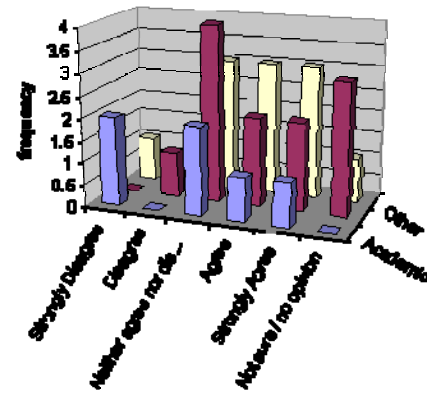
(This appears on the Keyboard Template included with the invitation to join the survey or in the confirmation note you receive after registering. If you are registered but do not have the Username at hand please just enter your full name or your e-mail address. I will substitute these details with your username before aggregating the data).

Q1. In Round 2, those in banking and those using or developing trade finance services generally expected online services to reduce discrepancies; but some academic researchers did not expect an improvement (see graph to right). Please say here what change, if any, you expect from Internet finance systems in dealing with discrepancies and why you think that.

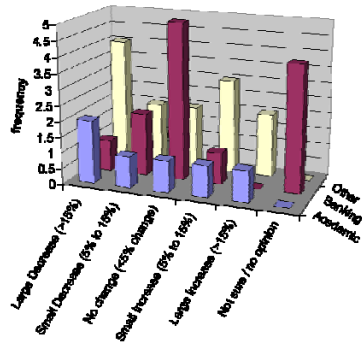


Q2. In Round 2, those using or developing trade finance services generally expected online services to improve security and reduce fraud against banks; people in banking and academic researchers were less optimistic (see the graphs for Q1(d) and Q2(f)). Opinion was also spread on the question about the cost of dealing with fraud. Please say here what change, if any, you expect Internet systems to make in dealing with security and fraud; and why you think that.

Q1(d) authentication & verification will improve security and reduce fraud against banks.

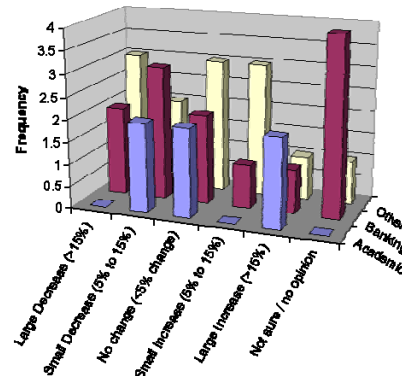


Q2(f) Cost to banks of dealing with fraud.



Q3. In Round 2, opinion was spread on whether online services would reduce the cost to users of finance of verifying their trading counterparties (see graph to right). Please say here what change, if any, you expect Internet systems will make in the cost of importers and exporters verifying transactions with counterparties.

Q3(g) Shift in cost of counterparty verification for users of trade finance.



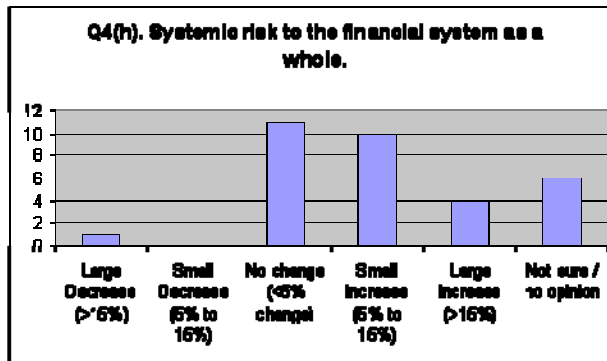
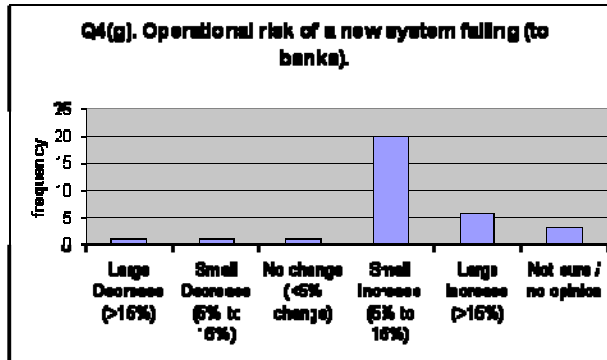
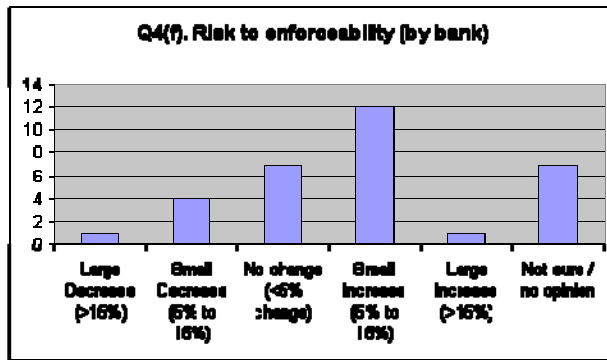
Q4. In Round 2, all the ongoing costs and risks (such as transaction costs, staff costs, discrepancies, authentication, fraud, Herstatt and Sovereign risks, and so on) were expected to stay the same or decline EXCEPT for operational risk (click for description), enforceability risk (click) and systemic risk (click). Round 2 opinion suggested those two would rise.

a) Do you expect the risk of unenforceability for trade finance systems that operate mostly online to be different to those running mostly on paper documents? Please say what will change and why: _____

b) Do you expect the operational risk of trade finance systems that operate mostly online to be different to those running mostly on paper documents? Please say what will change and why: _____

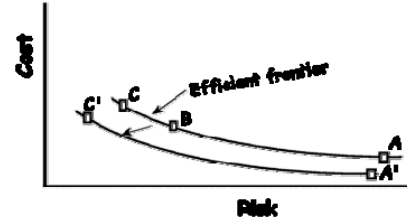
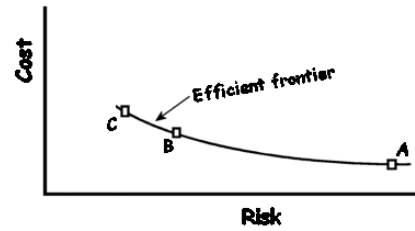
c) Do you expect the systemic risk to the whole financial system will change as trade finance systems move online and away from paper-based systems? Please say what will change and why: _____

d) With these three risks expected to rise, but other transaction risks expected to fall, do you expect an overall decline in risk when systems operate online compared to paper-based systems? Online transactions will be: More risky, or Less risky? How much to you expect the total risk of online transaction to rise, or fall, compared to an equivalent paper-based transaction?(rise/fall percent %): _____

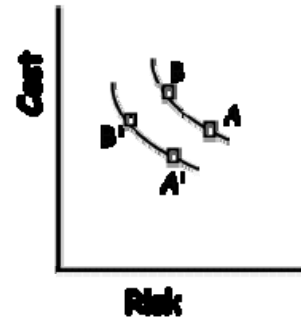


Q5. In the report to survey participants in Round 2, a model was put forward for showing the effect of online trade and finance systems on the cost and risk of doing business. Please answer the following questions about this model:

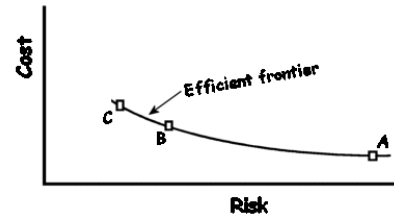
a) Is the “efficient frontier” model an effective tool for discussing the effect of Internet systems on the costs and risks of international trade and its finance? Please comment: _____



b) Is it reasonable to apply this model to importers and exporters, as well as to issuing banks and confirming banks? [For example, in the diagram on the right an issuing bank supplying a letter of credit to a given customer and dealing with a given confirming bank (at A in the diagram), could reduce risk by doing more extensive credit checking (to be at point B); could expect to shift to positions A' or B' due to the cost and risk reductions of online systems.] Please comment: _____



c) Given the efficient frontier model, is the shape correct: that is, does the curve downward to the right correctly show the trade-off of cost and risk for an importer using: A. payment in advance; B. documentary collection; and C. letter of credit? Please comment: _____



d) Will the total cost to banks of doing business reduce enough to shift the efficient frontier down after they move trade payments online (do not consider the one-time-only set up, re-engineering and training costs here)? How much do you expect total transaction costs to decrease (in percent %): _____

e) Will the risk to banks of doing business reduce enough to shift the efficient frontier to the left after they move trade payments online (do not include the initial one-time risk of making a change to an existing system here)? How much do you expect average risk on each transaction to decrease (in percent %): _____

f) Do you have any other comments or suggestions on the model?

Q6. Finally, I would appreciate your comments on some of the issues raised by respondents to the final question of Round 2, about competitive effects.

a): Some respondents expect that substantial additional regulation and taxation of trade and trade finance will counteract benefits gained by these online systems. What are your thoughts on the likelihood of increased legislative impediment to trade? And will the W.T.O. be effective in limiting the effect of such impediments?

b): Some respondents expect the accessibility of new systems will bring more small importers and exporters to the market as users of trade finance and other online trade services. Do you agree, and what effects will that have on the industry?

APPENDIX D – ROUND 1 DATA

Question 1 - Players: Are there “players” in the world of international trade, other than those just listed?

Original List- large international banks, small regional banks, importers, exporters, carriers and freight forwarders, government agencies, as well as the businesses actually offering online trade finance services.

A109- small businesses (which now have better access to services).

A117- insurers, inspection and classification companies and services.

A501- SWIFT

B311- chambers of commerce, trade associations, factoring companies, forfeiting companies, traders, marine insurers, credit insurers.

B444- factoring, forfeiting companies.

B423- Customs departments.

B313- I do not foresee any other.

B486- None.

C507- Third Party Service Providers to Exporters such as pre-shipment inspectorates, chambers of commerce, insurance companies, etc. and to Importers such as customs brokers and warehouse operators.

C518- Legal profession, CPAs & Auditors, Bank regulators.

C522- Customs Agents and Brokers, Document Couriers.

C527- Verification, testing and certification companies, Insurance companies, Consulting firms (who can develop new skills to serve the new needs of their clients), Software editors (enhance their Trade Finance products, e.g. back-office systems, to support the new electronic trade documentation process).

C546- Insurance companies, chambers of commerce and industry, surveyors and inspection companies.

C555- Factoring / forfeiting houses, Third party logistics providers, Insurance, Customs, Anyone involved in the supply chain can be affected.

Q2: Costs: Can you identify costs (other than those already listed) that users or suppliers of online trade finance services need to consider?

Original List- cost of each payment transaction, cost of each carriage document, installation costs, periodic service charges, cost of dealing with irregularities in documentation (such as discrepancies), cost of dealing with fraudulent transactions.

A109- costs of verification of counterparty bona fides, costs arising from computer or network problems and downtime, costs arising from government surveillance of transactions with some countries or for some goods.

A117- safety and security costs, cause on transfer of property rights on the goods.

B311- technology investment costs, other documents costs e.g. Certificate of Origin or Inspection Certificate.

B313- 1) In my opinion only 3rd and 4th items shall be new cost elements. First item is already serviced electronically (SWIFT) and its cost will not change. Others shall remain the same as of paper based transactions. 2) Other cost elements: Training of staff, new contracts between parties.

B423- Operational Cost. Due to simplification of processes Communication cost. Due to access of info. on line.

B444- cost of stamp duty in some countries.

B486- transit interest costs.

C507- (1) Cost of running dual systems for paper, electronic or paper and electronic transactions. Like the transition from fax to email and / or scanners it will be effected over 5-10 years to the point where the former will demise. This is exactly what happened with the telex machine with the advent of the fax. There are several other analogies also relating to trade. (2) eSolutions providers tend to charge the seller for the service yet the buyer will receive data to populate their back office systems and on-pass to customs broker and / or warehouse. As the importer will gain significant benefit from the e-transaction there will have to be some negotiation as to how the costs are paid and by whom. (3) Compliance costs will change / shift, i.e. the cost of a compliance engine or another party to check the trade transaction. Trusted Third Party (TTP) compliance costs will likely merge with TTP business risk costs for some types of transactions. Business risk being separate from credit (bank and country) risk.

C518- Annual membership cost to participants to “join/use” a system (e.g. Bolero).

C522- Staff Training cost.

C527- Costs of the internal reengineering associated with the new business processes (fairly hidden extension to the more basic installation costs).

C546- Staff cost, stationery.

Q5: Risks: What risks do you expect to change as we move from paper-based to online trade finance services?

Original List- credit risk (buyer default), Herstatt risk (settlement risk of the buyer’s bank default), currency market risk, sovereign risk (loss caused by a government), operational risk of a new system failing, and, systemic risk to the financial system as a whole.

A109- privacy risk if communications are not securely encrypted, loss of confidential data

A117- risk related with the operation of the systems

B311- fraud, transfer of ownership risk, performance risk

B313- There can be risks due to selection of service providers who may not be sound and reliable.

B423- Legal risk due lack of physical docs

B444- collection risk for cash against documents with acceptance transactions

B486- document risk, enforceability, jurisdictional

C507- change risk, up-skilling

C527- financial stability of the online trade finance startup itself

C546- forged or fraudulent documents

Q8: Requirements: What network, software, training and other infrastructure to you envision being required by SMEs.

A109- investment in secure server, secure encryption of communications (this can be a huge problem -- U.S. government forbids export of more robust systems and thus there can be encryption mismatches between firms in different nations), investment in proper backup and audit procedures as well as work procedures

A117- It will require an integrated platform for the full dealing with e-commerce, a software with capability to integrate commercial credit and transport operation in electronic support.

A501- Smartcards and bio-informatic security devices to validate electronic document issue.

B311- Internet access, open systems architecture, strong IT department, secure IT systems, Public Key Infrastructure, automated processing systems

B313- No idea. It is technical.

B423- Servers/Communication network/Trade finance system that can be linked with Bolero or Trade Card etc.

B486- minimal, PC with Internet connect, preferably high speed

C507- All size businesses will have to invest in infrastructure. The larger have more resource to do so but likewise the effort is greater. Larger players can't just get a PC and go for it.

C522- Web Access, PC Windows / Mac workstations for each staff member involved, initial training, support overhead.

C527- Internet access (at least DSL-based), New machines and software to support firewall and proxy functions, Granting an email address and a Web access to all users from the Import/Export teams, Basic infrastructure for digital certificate management (tools and procedures), Ensuring that the internal ERP system (or at least the purchasing/order management/invoice system) has open interfaces towards external systems (at least file-based), Training the internal IT staff to the Internet technologies (+ XML jargons), Basic training the Import/Export staff to the Internet medium.

C546- SMEs may outsource their trade processing to trade processing service centre.

C555- Web access, digital certificates, swipe card readers

Q9: Other changes: What other changes do you expect to arise from the shift from paper to online.

A109- banks that do not quickly adopt the new technology will lose to those who do, there may be some disintermediation in which banks are bypassed as alternatives evolve

A117- we foresee the maintenance of the participants in the sector, we also foresee an easy handling of transactions,

B311- Initial large investment in systems and product development by all parties, Possibly reduced costs for exporters, Possibly increased costs for importers, Small reduction in administration costs, Opportunity for banks to develop open account financing systems Improved information flows Reduce potential for fraud

B313- For me, it is merely a change in the media. Instead of receiving a paper, one will receive a screen image of the same thing. This image may be a transfer of a document created on screen by filling spaces of a preformatted blank page of the required doc or a transfer of the scanned image of a printed doc. The matter for the executive, risk-wise, is to assess whether he can still rely on the received image and carry on with his business without any drawback as he did in the past when dealing with paper docs and cost-wise whether this shift will cause any additional cost. ‘know your counterparty’ and ‘maintain the minimum cost possible’ approaches shall always prevail.

B423- Social and culture changes will pose grate challenges for implementing new systems. Many people will resist change as it may effect their jobs/ systems/procedures. There will resistance to the introduction of new system and this will be considered as a major changes. Worries for frauds and risks/cost.

B444- less people and quick reply

B486- limited downside, increased efficiency for importer & exporter, with lower costs

C507- Up-skilling is significant for all parties.

C522- There is more to be saved in the eProcessing of orders, shipping and fulfilment information that by electronic payment. Also change to payment systems is in part limited by the banking system and government process which moves more slowly that commercial pressure on importer / exporter

C546- It will expedite the movement of goods and cut down processing cost for the whole nation.

C555- There are two trends in the market that are convergent. First, the emergence of the Internet as a new delivery channel facilitating the shift from paper to electronic trading. Second, the continuing migration of business away from traditional LCs, etc. to open account. This second trend risks disintermediating the banks from the trade finance business, leaving them to pick up payments and settlements only. By adopting a position of “trust” banks can not only re-intermediate themselves by offering services such as “certified conditional payments” (tantamount to an LC but without the paper) but also create new opportunities for themselves to integrate banking services into other applications (e.g. e-marketplaces, procurement hubs)

Even greater international (and therefore cultural) awareness of every company involved in international trade (SMEs from many countries reaching more easily SMEs from other countries), Banks extending more and more their offering beyond the financial aspects of international trade (document preparation, import/export expertise, sourcing).

Q3 (CD01): What is driving changes to Payment costs?

A109- application and verification of digital signatures.

A117- dematerialization.

B311- straight through processing, linking of purchase order systems to bank’s system.

B313- No change (SWIFT is already providing this).

B423- Access of docs electronically.

B486- verification.

C507- Flexibility of emerging payment options and speed of payment once authorised.

C518- Automated LC compliance capabilities of system to reduce employee count.

C522- Difficulty of managing Letters of credit often costs more and prevents delivery or payment

C527- no more multiple re-keying of data when issuing the LC (by importers, banks, etc.)

C546- payment is faster and save on interest cost

C555- Ability to dematerialise

Q3 (CD02): What is driving changes to Document costs?

A109- application and verification of digital signatures

A117- dematerialization

B311- automated issuance, electronic data transfer

B313- None. Transport docs can be delivered on line I/O handing over a print.

B423- No need to send docs by carrier/post

C507- Timeliness of getting to market ... excuse to use / drive sea waybills in lieu of bills of lading.

C522- Express Ocean bills improve delivery speed (Bills where the title is not held by possession of the doc)

C527- easier manipulation (electronic, hence forwarded via email, EDI, etc.) and better validation (digital signatures)

C546- expedite the release of cargo as documents are received electronically

Q3 (CD04): What is driving changes to Installation costs?

A117- initially can rise because of the set up of the equipment

B313- Need to install new equipment if there is none already.

B486- Internet-based

C507- Straight-through-processing / connectivity / language such as XML

C527- companies nowadays better equipped with up-to-date information systems, reduced training because staff accustomed to technology

C546- one time installation

Q3 (CD06): What is driving changes to Periodic Payment costs?

A117- end or lowering of handling of papers

B311- investment in technology costs, maintenance costs

B313- Need to service new equipment and software plus maintenance.

B486- labor costs

C507- Trusted Third Parties (TTP)

C518- System (e.g. Bolero) membership fees - level of fees will drive usage by company size.

C527- This is most likely a new (additional) cost generated by the online offering...

C546- Monthly/yearly service charges by service providers

Q3 (CD07): What is driving changes to Discrepancy costs?

A109- communication costs incurred in correcting them

A117- communications

B311- automated issuance, electronic data transfer

B313- None. Checking will be performed similarly, be it on screen or on paper. Work is same.

B486- labor costs

C507- Timeliness and cost of getting it wrong

C518- no cost/no fee if compliance automated.

C522- Matching transport and commercial documents to the banks LC is often a tough job, mismatch causes payment problems

C527- reduced thanks to automated field-to-field checking (normalized documents)

C546- less discrepancy on documents

C555- Doc prep facilities; utilities for risk and financing

Q3 (CD08): What is driving changes to the cost of dealing with Fraud?

A109- counter-party verification and secure (encrypted communications)

A117- early detection

B311- secure encryption systems, public key infrastructure

B313- No change from paper based ones. A fraudulent doc can be scanned.

B486- Verification.

C507- Damage to reputation.

C518- Who knows?

C522- LCs are pretty secure newer payment methods are higher risk but reduce overall cost.

C527- PKI-based solutions more reliable.

C546- reduce fraudulent transactions if it is a secured system

C555- Risk of identity theft

Q8 (CD09): What is driving other costs you identified?

B311- (technology investment costs): system and product development costs, automated issuance

B313- No idea.

C522- (Staff Training): Militates against change but is low and a one of cost.

C527- (Reengineering): one time, due to the introduction of the online processes

C546- (Cost of Stationary): reduce stationery cost, i.e. paper

C546- (Staff costs): reduce number of manpower

Q6 (RD01): What is driving change in Credit risk?

A117- no relation with electronic

B311- access to information, online verification systems

B486- Basel II

C527- better control via electronic means over the flow of transactions improves credit management

C555- Cost of identity theft

Q6 (RD02): What is driving change in Herstatt risk?

A117- very law in many European countries

B311- netting, clearing houses, real time settlement

B486- interbank instructions

C527- improved peer validations through joint efforts (e.g. banks associations such as Identrus)

C555- Regulatory requirements

Q6 (RD03): What is driving change in Exchange risk?

A117- a diminution of risk in intra-day trade

B311- monetary union, alignment of the global economy

B423- delays in payments/Mistakes

B486- Central Bank intervention by the L/C Issuing Bank branch location

C522- Faster settlement means less exposure

Q6 (RD04): What is driving change in Sovereign risk?

A109- government censorship, delayed transactions, blocked payments.

A117- no relation.

B311- Access to information, insurance cover.

B423- Change of government/Legal system changes.

B486- Sovereign restructuring impact to trade debt & L/Cs.

Q6 (RD05): What is driving change in Operational risk?

A109- employee errors, failure to follow procedures.

A117- proper working of the system.

B311- improved security, clearing houses, real time settlement.

B423- Mistakes/delays/system failure.

B486- system security, system reliability.

C522- LC system is slow and complex.

C527- technology for replication of systems, continuity and resilience, is more mature.

C555- Regulatory requirements impacting on capital reserves.

Q6 (RD06): What is driving change in Systemic risk?

A109- widespread loss of confidence in, or worldwide breakdown of network.

A117- this is the genuine risk in electronic trade.

B311- netting, automated clearing systems.

B486- no change

C527- failure of one participant may have more impact on the system since it is easier for this participant to reach multiple counterparties

C555- Demand for global standardization.

Q6 (RD07): What is driving other costs you identified?

B311- (Fraud): Verification systems

C527- (Online TF Provider) the more clients using the online trade finance service, the less risk on the service provider

B311- (Transfer of Ownership): Linking transfer to payment process

RO3: newrisk3

B311- (Performance Risk): Automated verification of performance

APPENDIX E – ROUND 2 DATA

Q01(a): reasons for disagreement with: “Electronic documents, processed straight through to back-end systems, will substantially reduce transaction costs for banks.”

A109- However, it has to be done right. Otherwise the bank will have to incur large costs fixing client problems, maybe more than the savings from transaction costs.

B311- Remains unproven at present. The cost of the investment to achieve the technology needed to handle electronic documents may outweigh any potential reduction in transaction costs.

B514- in the long run perhaps... but in the short run the investment made to support such a service will be higher what it initially is.

B515- While ultimately per transaction costs may be reduced in time movement to this technology and all associated linkages will require substantial up-front investment by banks and in some cases, by corporate companies.

C503- Because it moves the time spent to the user rather than the banker the cost for infrastructure for this to happen is increasing in parallel

Q01(b): Having documents in electronic form will substantially reduce time delays.

B514- the transmission time of electronic forms depend on the size of the forms as well as the infrastructure

C503- for the same reason above

Q01(c): Having documents in electronic form will substantially reduce discrepancies between credits and tendered documents.

A246- Source data problems don't go away -- and there is no low-cost correction process once an online loan application is in the stream and begins triggering other activities (credit checks, etc.)

B311- Again this is difficult to predict. In theory there should be a reduction but the input of data to an electronic document can be as prone to error as for the production of paper documents. Human beings will still be responsible for ensuring the input of the information.

C503- There is a larger margin for error if no one is checking them

C507- Depends. Strongly agree if STP used. Generally if senders has generated data from source where there is a measure of data validation. Otherwise e-docs will be no different to p-docs.

C527- An electronic form is certainly the way forward but a generalisation that it would reduce discrepancies in all cases as long as it is electronic is too optimistic. The format and structure of the electronic documents must be detailed enough to allow for a one to one checking of all fields... For example, a SWIFT message MT700 is an

electronic document, however the free format nature of its description of goods and documents required makes it impossible to safely use for automated discrepancy checking.

Q01(d): Electronic authentication and verification, will improve security and reduce fraud against banks.

A109- But it may open the door to crackers so they may more easily obtain personal information about bank clients unless security is 100%.

B343- Compliance Issues and “know your customer” must be adopted to make this work.

B515- It is too early to judge given the relatively low global usage of these methods

C503- Hackers can infiltrate virtually any system and put all clients at risk

Q01(e): Electronic documents, will reduce staff costs for banks.

B343- Banks must still ensure that they have local customer service support.

B514- the cost of maintenance for the system will even itself out with the current manual system.

C503- If there is a built-in checking system then it will reduce staff time otherwise they will be spending more time backtracking to make corrections

C507- Agree - but the degree of savings will depend on both STP and training. A substantial amount of training / upskilling will be required by the average banker who must be able to check e-presentations, mixed e and p presentations, access an external system to check a referenced document e.g. web site, understand e-terms and rules, etc.

C527- Hopefully, staff currently buried in the paperwork will rather be allocated to more sales and/or customer support oriented assignments.

it does not reduce staff costs as it does not enable staff to reduce time consumed for perusing the documents, it only reduces space costs as it would reduce space needed for storing the documents.

Q06(a). More new online services for trade finance will soon be offered.

C527- There are already a few tentative online services available (online LC solutions for banks from software editors, TradeCard, BoleroS SURF, Identrus Eleanor, SWIFT TrustAct, etc.). They don't have any critical mass but at least provide some good technical and legal basis to start from. If new actors become available, they will most likely brand their services on top of those existing services.

Q06(b): New online services will mostly come from (be owned by) existing financial service providers.

A109- Corporate culture prevents much innovation, and there is resistance to ‘fixing what ain't broke’.

A246- No funding for start-ups at present.

A254- Generally in e-finance, there are a number of market entrants that originally do not come from the finance area.

B515- Much of the lead in this area is already coming from non-bank providers. Banks will step in and become users and may enhance existing offerings but are followers at this stage.

C507- People will always see an opportunity to niche market new technology.
@GlobalTrade but one example. However, the

C546- Not necessary. It may also be from software house or new joint venture

Q06(c): New online services will be provide services complementary to existing online services.

A117- Business are business

A255- Business are business

Q06(d):

A254- at least for some years there will be a transition phase, where several systems are offered

B515- They will be complementary

Q06(e): Complementary trade finance service providers will soon merge.

no comments made.

Q06(f): Competing trade finance service providers will soon merge.

A105R No reason for market structure to change much.

Q06(g): Trade finance business will move from bank branches to head offices.

B343- Local customer support always required.

B515- This has happened in most major financial markets/countries

C503- People always want and need the local branches and face to face contact.

C527- Even if the trade processing will become more and more centralised, the actual relationship with the customers may stay at the bank branches level.

Q06(h): Banks will lose trade finance business to specialist service providers.

A246- Disaggregation of bank is a 30 year trend that will continue

B343- I do not believe this will happen to the 6-7 global banks that provide trade.
Local/regional banks - Yes. Although they will also lose to the global banks.

b444- because of the nature of the trade finance

B514- the & trust concept banks provide is what makes trade finance work.

C503- Because they are large and often anachronistic in their approach

C527- Banks have the expertise to make a trade transaction successful and they already have a huge set of existing clients which they can pitch efficiently for their new online

services. Such critical mass will be very hard to reach for new specialist service providers.

C546- Banks could also keep or increase the business volume if their service is competitive.

Q06(i): Shifting to online methods will increase the amount of international trade and make the world economy more efficient.

B343- In theory yes, but still to be proved.

B514- only a small percentage of companies are comfortable with online services and these are located in developed countries such as USA and Scandinavian countries.

B515- I am not sure it will actually increase global trade. It may make some players more comfortable in expanding beyond local markets

Q06(j): Most businesses will only need inexpensive modem and Internet connections to access new online trade services.

A109- The big issue, and cost, is in proper security of all transmissions. This will entail substantial costs if done correctly. Who will want to do business with any firm that has sloppy security of financial and other vital data?

A117- Digital signature equipment

A255- Digital signature equipment

B343- This is already the approach of our bank.

B514- inexpensive modem and Internet connections are not reliable and do not ensure permanent connection.

C507- Depends on level of complexity required. Many of these solutions are designed for small users to key in data at the web but for larger users there has to be a lot of re-engineering.

Q07: What other competitive effects do you expect to see occur as trade finance moves from paper-based to online methods?

A105- 1. Entry of non-bank service providers; 2. easier entry of small business to export/import; ... of scale.

A109- A prediction that governments around the world will put layer upon layer of new regulations and taxes in place -- even contradictory rules -- seems safe to offer. This may lead to huge costs of implementation, legal services, lobbying legislators, and compliance (monitoring and enforcement internally). Consider the costs of the "know your customer" regulations in the U.S. that require banks to act as law enforcement and informers on their customers, for just one example. Of France's law about what can be sold versus U.S. e-Bay that operates under U.S. law.

A246- More competitive pricing. Greater unbundling.

B311- Closer links between the credit insurance industry and the banking industry.

B423- Outsourcing of trade finance services to specialist providers.

B444- -increase security and increase the speed

B510- Templates of most fre

B511- The technology in the Philippines is not yet that sophisticated as in other country like Singapore. Acceptance also is one of the reason. Not all user knows about the online methods. Yet there are still lots of the client wants personalized service.

B512- New players will try to get a piece of the cake such as freight forwarders and insurance companies. More efficient processing within corporates as well as in banks.

B513- Documentary handling will be moved to low cost areas however importers/exporters may wish to continue talk to competent people locally.

C522- Integration of the supply chain will make the settlement and finance processes invisible to the end use.

C555- More hubbing / multi-branching architectures. More outsourcing.

APPENDIX F – ROUND 3 DATA

Q1: In Round 2, those in banking and those using or developing trade finance services generally expected online services to reduce discrepancies; but some academic researchers did not expect an improvement (see graph to right). Please say here what change, if any, you expect from Internet finance systems in dealing with discrepancies and why you think that.

A109- It will depend on the competence of the system set up to deal with discrepancies. A well-designed system could reduce problems, but one that is not so designed could exacerbate the problems.

A117- More certainty in documents content.

A208- The basis for saying ‘neither agree nor disagree’ was that the academic side was probably not close enough to the problem to have an accurate sense of what’s likely to be true here. That was my thinking.

A246- Should help to have connectivity in resolving discrepancies.

A254-

B324- -Step 1: online support for banks/customers showing discrepancies on scanned documents which then are corrected in web-based docprep modules
- Step 2: growing data/document exchange of TF-community based on XML-standards which allow easier checking of co

B343- 1. e-docs will reduce the number of discrepancies and improve STP by data mapping and pre-defined templates - however, this may still be some way off
2. By utilising proprietary online systems, a small core of global trade banks are insourcing document preparation and checking - this ensures document compliance

B350- Faster and more secure exchange between parties should drive to a more efficient management of such discrepancies

B420- - control before the exchange of documents will avoid most of the material discrepancies

- other discrepancies should arise from the use of faster procedures
- the feeling that everything is under control thanks to the systems can be dangerous

C518- As documentation goes more online and data moved electronically onto documents, discrepancies should decrease somewhat. However, documents will move online rather slowly and certain discrepancies cannot be eliminated (e.g. late shipment).

B510- The Internet finance system should create template documents that fulfil the requirements of the ICC 500 with regards to a document type i.e. Commercial Invoice, Packing List etc. Furthermore the system should be able to read doc credits and populate documents relative to that particular credit which should assist the exporter towards presenting compliant documents. This will take care of most credits, however, complex credits will require liaison between all parties to prepare and present compliant documents

B511- True, trade finance services reduces cost, errors, manpower, fraud. Normally during transition period we will definitely encounter resistance on both parties. Service quality and personalize service are being sacrifice for this transition which I think it dangerous on this competitive world.

B512- I'm of the opinion that we will see a decrease in discrepancies if/when Corporates use the possibility to electronically fill in the different documents presented under an L/C i.e. full STP or cut and paste.

B513- If documents are really produced in electronic form, then the Internet will help to reduce discrepancies. However legal constraints and general customs may prevent electronic documents in the foreseeable future.

B514- Discrepancies will not be reduced. Documents will still be produced by human beings.

B515- I believe a fully integrated document preparation capability which downloads all information from the original LC and uses this info. to create documents under LCs will reduce discrepancies and the time it takes to verify documents.

B516- There should be new international guideline issued to deal with e-documents, albeit, acceptable to all parties hence reducing the discrepancy.

C503- Not sure

C507- Already answered when first signed on ...

C522- Direct experience with converting paper processes to electronic shows a substantial improvement in accuracy.

C527- A natural feature of so-called Internet Trade Finance services is electronic structured documents.

If both the purchase order or LC manipulated by the importer and the commercial invoice presented by the exporter are electronic and above all structured, the automated matching is made possible: do the beneficiary's name and address match, is the total amount within the range defined in the LC terms, what about the description of goods, etc.

For that initial part of the discrepancy checking in trade documents presentation, systems are therefore added a clear value (already available now in various solutions) by simplifying the task of reconciling data.

Checking other types of documents (such as customs or insurance) may however be trickier, and the benefits of technology in their handling is not yet proven.

With the latitude offered in the current LC terms, it would be rather difficult (to say the least) to automate the discrepancies handling in all cases.

Also, will Internet Trade Finance systems change the negative attitude of some importers and even in some cases issuing banks which purposefully issue LC with terms that cannot be fulfilled by the exporter in order to delay their payments by claiming unfair discrepancies? Certainly not indeed!

C551- None.

C555- Electronic presentation alone adds little value, especially if the documents are then just printed out the other end (straight to printer). The true value will come with genuine STP. However, some docs required under an LC have to be paper so we are still

going to have problems reconciling paper to electronic. Overall I do agree with the statement but not strongly.

C574- Although international trade is the most opaque system and most inefficient system in the world, sectorial standardisation is progressing, which is one of the first condition to be met if we want to automate a sectorial supply chain. For the trade finance part, the sustained efforts by Tradecard, Swift, Identrus, Bolero and the ICC will eventually pay off. The gap in this evaluation could be more a gap of 'timeframe expectancy' ...I would assume. The other key drivers are the great costs for financial institutions and large buyers...which is probably the key stimulus...

C546- Electronic system will help matching the details in LC to the electronic documents. It will reduce the typo errors and improve the accuracy of documents presented.

B443- Don't know.

C573- Overall - none. Initially there may be an improvement, as the system will be new, and the focus of a lot of attention, but ultimately, it is run by fallible humans. Entering data once does reduce discrepancies PROVIDED that the data is correct. Make a mistake in data entry and if it goes unnoticed, it could have a substantial "ripple" effect.

Q2: In Round 2, those using or developing trade finance services generally expected online services to improve security and reduce fraud against banks; people in banking and academic researchers were less optimistic (see the two graphs to right). Opinion was also spread on the question about the cost of dealing with fraud. Please say here what change, if any, you expect Internet systems will make in dealing with security and fraud and why you think that.

A109- The Internet has potential to reduce fraud or increase it. Once again, it will depend on the system design and audit. An ill-designed system will open a Pandora's box of problems that are hard to exaggerate. A good system can reduce fraud and increase security. And such a good system must have the support and involvement of law enforcement -- not for ferreting out tax avoidance and such state objectives though -- for the sole purpose of preventing and prosecuting fraud between contracting parties.

A117- The cost of security Internet must be higher.
In this field investments should be maintained and increased.

A208- Internet systems will get hardened to fraud in the coming years, especially where there are problems with authentication and identity verification. But there still needs to be broader agreement about standards.

A246- Larger scale frauds possible online but the general losses from cash handling etc. will decrease.

A254-

B324- - first of all there is a natural barrier for criminal parties to find their way easily into a well verified PKI environment and/or establishing proper bank relationships and getting access to electronic TF-processes.
- we expect improvement as a proper

B343- KYC and Compliance requirements may, in the initial stages, in fact lead to more cost for online services - in the long run, I do not see a significant reduction in cost

B350- Contrary to popular belief, it is obviously more difficult to forge computer generated documents than paper-based ones (which does not mean it is impossible to forge computer generated sources, very far from it). Paper is the level 0 of security.

B420- - fraud will remain possible and could be worst because of the action of hackers or internal operators having access to the systems
- anyway, security will have to be increased
- insurance will be more expensive in a first stage

C518- I doubt that fraud will decrease materially. Banks can generally protect themselves from fraud perpetrated by strangers. The fraud we succumb to is perpetrated by our own customers (customer staff) that we think we know and give security clearance to allow them to get onto the online system!

B510- The Internet systems should have secured sites and ensure any correspondence is through another secured site identifiable by all parties. Any correspondence through unsecured sites should be rejected. Furthermore, all parties to the transaction should have their own security system with regards to correspondence from their offices.

B511- There will always be lots of hackers who can get into the system and inhibit virus which in turn will put everything on hold. Unless otherwise we have a very good backup and business continuity for any security and fraud in place.

B512- When using a PKI structure for authentication I believe that the security will improve.

B513- Difficult to foresee because as current forms of fraud may diminish new 'electronic' forms may turn up.

B514- Fraud will not be reduced. The nature of it will change.

B515- Internet systems will not improve fraud and the cost of dealing with fraud may increase in the short term as banks establish more electronic and Internet-based applications to ensure continued security and detect fraud in a rapidly changing landscape.

B516- All parties involve in online services should be limited to reputable and well known international companies

C503- Strongly disagree - I think computer hackers that have a sophisticated techno skill can now access a lot of information that they otherwise wouldn't have been able to because it wasn't all in one centralized repository

C507- Already answered when first signed on ...

C522- Electronic processes are less accessible to low level fraud and perhaps more attractive to major fraud where the defrauding agent is highly technically capable or in a position of trust and authority.

My view is that that is a bit both ways.

Cost of the fraud might also be related to the low and major fraud issue

C527- Digital signatures and PKI infrastructures allow documents to be sealed with their issuer's identity.

The recipient of the documents can then check that the author is who he claims to be by verifying the attached signature and its relationship with a trusted Certification Authority.

This provides a clear benefit compared to the basic hand-written signature, and therefore contribute to reducing fraud on that matter.

The same advantage applies to the authentication to log in the online service.

Will the electronic documents and related online services however avoid legitimate parties to issue fake documents? Not necessarily.

C551- Electronic IDs, proved to reduce fraud in Scandinavia.

C555- I believe that both the technology and legal framework are there to support this through the use of digital certificates/signatures. What is lacking still is market acceptance. So yes I agree with the statement but timing is in question.

C574- All depend which risks we refer to. Banks and Visa like corp. are racing to introduce new security features in order to keep public trust. The stake around 'trust' of financing transactions over the Internet is so high that we can be optimistic about the security (hacking). Internet per say does not eliminate or accentuate fraud risks. Often, fraud can be detected early in a trade finance transaction by our experts. Systems integration is critical and a major priority for all banks...this will help.

C546- The electronic system will reduce the risk of forgery in documents preparation. Manual signature could be easily forged. With an adequate security system and ID/password control, it could even prevent frauds and forgery. SWIFT communication system is a good example. Cost could be higher in the short term but it is lower for the long term as the cost of being involved in forgery is even higher.

B443- Don't know.

C573- My view is that the number of fraudulent occurrences will reduce, but the amount involved will be greater. 1. Because it will be more difficult, the fraudsters will want bigger rewards. 2. There may be an increase of the "little & often" type of embezzlement, especially if it is of the type which is difficult to detect.

Q3: In Round 2, opinion was spread on whether online services would reduce the cost to users of finance of verifying their trading counterparties (see graph to right). Please say here what change, if any, you expect Internet systems will make in the cost of importers and exporters verifying transactions with counterparties.

A109- With analogy to Verisign to guaranty identities, etc., cost should be reduced significantly.

A117- Speed and certainty and free use of Internet

A208- I think they will reduce transaction costs.

A246- Digital signatures are a positive steps here.

A254-

B324- - PKI infrastructures will allow better and safer counterparty verifications.

- re-use of certain infrastructure (PKI etc.) and or single-login's on platforms allowing

to perform different transaction tasks
- Systems as such will support a high level of

B343- Ability to authenticate identity online should lead to a small reduction in cost

B350- Less handling of mailed documents should drive to certain reduction. IT costs are to be seen as an investment, but when done, computer-based documents should prove cheaper to handle.

B420- there will be a move from human resources costs to IT, security costs

C518- Over time there is potential for the cost to reduce. For example, LCs could be routed directly to beneficiaries online without being advised through a local bank IF the beneficiaries have confidence in the security technology. It may take a long time for that to happen.

B510- Internet systems would take away the manual interventions e.g. courier, re-documentation etc where the same documents can be edited to meet requirements. Also, as mentioned above, secured sites should take care of the verification process.

B511- It will be cost effective for the Vendee but not necessary to the customers. unless otherwise the saving of the vendee will be pass on to the customer. But be reminded that there are fees paid to the Vendor.

Transactions will be faster but not necessary efficient I believe we will still encounter some hiccups.

Fraud is the primary concerns for both counterparties specially in Asia-Pacific people still believe in the physical presence of the documents.

B512- It should be possible to automatically verify the documents.

B513- Not sure why the Internet would make a big difference.

B514- There may be a slight decrease in the cost. But there is a long way to go to enable importers/exporters to rely on Internet systems.

B515- No or little change

B516- No change

C503- I think the lowered cost due to technology will be offset by the higher costs of dealing with Internet security and constantly changing technologies that require ongoing upgrades

C507- Already answered when first signed on ...

C522- Again direct experience is that this is a substantial lowering of cost particularly in high volume environments.

C527- With solutions such as Identrus (and only if it manages to reach critical mass), parties are implicitly 'verified' by being having their identity certified by the bank which issues their certificates.

When users want to check their counterparties and see that they hold such a certificate, it tends to improve their credibility because they are attached to a known bank. With such a scenario, the cost of checking counterparties should decrease.

Other verification services (maybe more interesting business-wise because they go beyond authentication) are greatly improved when brought online, such as with Cofase @rating or D&B.

C551- Less costs, more efficiency.

C555- I don't see any significant increase/decrease in cost in the short term. What should improve is quality of service. Over time, costs may come down.

C574- It is quite obvious that automating document workflows and finance-payment workflows will reduce errors and time. The most critical issue is more the growing complexity of customs rules and the fact that in many countries, importers will be relying on paper based documents for many years to come. This is not an issue for big international buyers, but small buyers, certain developing countries governments and small exporters. This market will obviously take more time and costs saving will take sometime to materialize. However, even there, we can see third parties services providers like ViaSafe.com (e-logistics) who will be reducing costs to the small importers !!! and exporters !

C546- The cost of manual verification is even higher as the parties need to have a bigger space to keep all manual specimens.

B443- Don't know.

C573- Market forces will initially produce reduced costs, but once the players are "locked in" we can expect increases. The Australian banking experience may be a guide to this. (e.g. once salaries became direct deposits, millions were locked into the banking system which then exploited the "bank charges" revenue stream)

Q4: In Round 2, all the ongoing costs and risks (such as transaction costs, staff costs, discrepancies, authentication, fraud, Herstatt and Sovereign risks, and so on) were expected to stay the same or decline EXCEPT for operational risk (click for description), enforceability risk (click) and Systemic Risk (click). Round 2 opinion suggested those two would rise.

Q4(a): Do you expect the risk of unenforceability for trade finance systems that operate mostly online to be different to those running mostly on paper documents?

A109- The costs should be less if only because of reduced postage and copy costs.

A117- There are countries in which the electronic documents are not yet recognized by courts.

A208- Small increase. Time will lead to the refinement of the new approaches, increasing the likelihood for parallel business processes.

A246- Initially enforceability for trade finance systems that operate mostly online will be challenged but courts should uphold it and that will help.

B343- In the initial stages, yes. This is likely to improve as more jurisdictions accept 'electronic' trade

B350- But it would really depend on adapting existing legal systems

B420- no, I don't expect a tangible change at this level, at least between good professionals. Because in both types of documents, the legal advisors will revise the documentation the same way, and those points are mostly under control.

C518- The risk will be higher at the beginning until the world court systems catch up to the 'online age'. I.e. there need to be some cases tried and settled for everyone to know what the online risks are and how they may affect the underlying case.

B510- Documents need to be protected and only the issuer should be able to edit them. This would increase IT costs if the documents are sent to and fro on numerous occasions to fix errors.

B511- yes all banks deals with documents meaning physical presence of the documents where all banks are rule by the UCP 500. unless otherwise scanned copies documents are call for or acceptable

B512- It is important that all countries involved in the transaction follow international laws such as UNCITRAL, GUIDEC, regarding online transactions

B513- Don't really what you mean. I guess the risk that the legal environment is not in place for electronic documents on a worldwide scale, especially in the trade finance intensive emerging markets.

C503- I think authenticating signatures might be an issue in this matter when a dispute hits the courts

C522- Initially I suspect that unenforceability will be higher but as the legal systems and commercial practice and culture adapt I suspect that this will be no different for either form.

C527- The underlying jurisdictions remain very different from one country to the other. Electronic transactions are affected by that like paper-based transactions.

C574- Legal systems will take much longer to adjust than the actual operational capabilities of transactors. The recent failures of the European Community to address this specific issue is a clear indication of the difficulties ahead.

Q4(b): Do you expect the operational risk of trade finance systems that operate mostly online to be different to those running mostly on paper documents?

A109- Yes, if only because of reduced copy and filling costs, and delivery delays and losses of documents.

A208- Small increase. The technology solutions are new to the business process environments so it will take people awhile to get all the issues sorted out to provide maximal operational risk control.

A246- Operational risk will be lower as long as firms use backups and have recovery plans in place.

B324- less, as processes are much better defined and controlled

B343- There may be a risk for externally-controlled systems, but I would not expect this to be an issue for bank-proprietary systems.

B350- Subject to identification tools being accurately exchanged between parties

B420- the IT risks will be added on top of the human factor, the latest should not be decreased because of the continuous technical changes

C518- The human risk will not change but the systems risks will increase as we all become more systems centric - e.g. risk of system failures, risk of not keep pace with technology.

B510- Controls need to be in place with respect to what authority levels are allocated to different users, especially with regards to the 'release' function. This will ensure correct data is released after the normal verification process has taken place.

B511- consistency has been sacrifice. other issue such as regulatory compliance will also be affected

B515- In time people dealing with trade purely in an electronic form will lose the skills of detection and new entrants will not have the depth of knowledge which comes from details examination of documents in paper form

C503- I think technology could be used to build in safeguards to compensate for human error and for technological complications, but that would be an expensive process requiring higher outlays of technology initially.

C522- Computer uptimes in banking are seemly very consistent. Strong anecdotal evidence (huge banking profits from automation and Internet banking and online services) seem to indicate this is a important future business mode - and it will be resourced properly

C527- Obviously the risk of failure with software and hardware is more important with electronic systems (simply because there is almost no such system with purely paper-based transactions).

However, there are operational risks inherent to paper-based transactions (losing an original document, fire, problem with the post, etc.) which can be more easily circumvented with the electronic systems for which contingency plans are usually lighter to implement (it is easier to back-up electronic data to a remote network 1000 miles away from a data centre than doing the same with a building full of filing cabinets).

With the advent of technology and the lessons learned with 9/11, I tend to believe that the operational risk with trade finance systems is smaller than with paper-based transactions.

C551- Due to higher costs with all systems.

C574- At this point in time, it is difficult to say.

C573- computer systems are at the most vulnerable when they are initiated or undergo upgrading. At these times I see the operational risks increasing, but reducing once "bugs" have been eliminated.

Q4(c): Do you expect the systemic risk to the whole financial system will change as trade finance systems move online and away from paper-based systems?

A109- Overall risk should not change appreciably, but the response of the system will be accelerated. Effects will sweep through the system more speedily. This might have the potential of increasing systemic volatility.

A117- The regulation against systemic risk should be improved and extended in a paper or electronic environment.

A208- No change or small change. Changes in systems may refine things at the margin, but intl finance is still largely drive by the stability of intl relationships, the economy, trade flows, etc.

B350- The risk depends on the speed of shifting from one system to the other.

B420- - newcomers traders or service providers can come to the market very easy, without being experienced and trustful
- transactions will be closed (too) rapidly

C518- If we are talking about trade finance systems, I see a small increase in risk. On the other hand, a truly interconnected global payments system could be subject to significant risk of failure.

B510- Depending on the function of the individual, a lot more 'on screen' reading and verification process will need to be adopted.

B513- Credit risk unchanged.

C503- I would anticipate a small increase in risk due to the fact that the financial sector has long been used to technological solutions and it is probably an integrated component by now. That being said, the scope of technology and the almost complete reliance on it could offset any historic experience.

C522- I expect this to be no different or better over the long term due to the vast improvement in systems reliability and availability

C527- The greater amount of information available with electronic systems (and the capabilities to mine it efficiently) should decrease this risk.

C551- Less human error risks.

C574- The overall systemic risks will be neither bigger nor smaller. They will be displaced. At this point in time, this is all very speculative.

C573- A mixture of online and paper based systems may result in breakdowns at the point where they intersect. (data entry and transcription errors, for example)

Q4(d): How much to you expect the total risk of an online transaction to rise, or fall, compared to an equivalent paper-based transaction (rise/fall percent %):

A109- -10%

A117- 50

A208- I can't quantify this.

A246- 27

A254- fall: 5 - 15%

B324- 25%

B343- 5

B350- 25%

B420- 8

C518- 10-15% less risky

B510- 20/80

B511- 15%

B512- fall 5-15%

B513- 5%

B515- 0%

B516- 60% fall

C503- I would anticipate a substantial increase, but not sure of a % at least 30% I think

C507- 0%

C522- 5%

C527- fall 10%

C551- 15

C555- 5

C574- On a transaction by transaction basis, the total risk should decrease in highly consolidated sectors like automotive, aerospace etc... Whether you use online systems or paper, its often a question of experience and ‘nose’ of our officers processing the transactions or contract. If we compare with the impacted of online services to retail banking, even though trade is much more complex and sophisticated, we can foresee the commoditization of certain segments and the overall risk should decrease.

C546- fall 60%

B443- Small increase

C573- <5%

Q5: In the report to survey participants on Round 2, a model was put forward for showing the effect of online trade and finance systems on the cost and risk of doing business. Please answer the following questions about this model:

Q5(a): Is the “efficient frontier” model an effective tool for discussing the effect of Internet systems on the costs and risks of international trade and its finance?

A109- Efficient frontier was developed for investments in securities. How do online trade & finance systems relate to stocks and bonds? These systems are apart from the investment system I think.

A208- This makes sense and is standard analysis in this area. I'm not sure what the survey means about this being a "tool." It's just a way of relating visually what the relationships might be. You see this all the time in operations management and marketing, for example.

A246- It is simple but helpful.

However it could apply to many types of online activities (eg., ATMs) - What is unique to trade finance?

B324- - not always. This model only covers a product (cost) driven view, but leaves aside the overall process. online trade finance re-models the entire process over time - the products used are only part of the equation. electronic trade finance introduces a substantial portion of workflow/process advantages and targets less the reduction of product costs.

B343- My initial thought is that it is a useful indicator - it remains to be seen whether or not it can be used as an effective tool

B350- Information access being facilitated by Internet, the Efficient Frontier should even appear more easily

B420- but, as any effective too, simplified

C518- The model depicts what we are all trying to achieve. However, in your example it could be argued that an importer may be able to pre-pay an exporter for goods faster online, but his risk may actually be higher not lower! But, in general I agree with the concept of the model.

B510- To introduce change from manual to online procedure and process, all parties would be looking at reducing costs and risks.

B514- The tool itself is useful

C503- This section is beyond my capabilities.

C522- Unknown

C527- Yes, if the decision is to focus on cost and risk only.

C574- There are many more variables (dependent and independent) involve and we have yet to see a realistic model. This one oversimplify the expected behaviour.

C573- A bit out of my area of knowledge, but it seems to be a logical way of looking at this situation

Q5(b): Is it reasonable to apply this model to importers, and exporters, as well as to issuing banks and confirming banks? [For example in the diagram on the right an issuing bank supplying a letter of credit to a given customer and dealing with a given confirming bank (at A in the diagram), could reduce risk by doing more extensive credit checking (to be at point B); could expect to shift to positions A' or B' due to the cost and risk reductions of online systems.]

A208- Conceptually, this seems obvious and appropriate. Methods-wise and in terms of data accuracy and information requirements, this will likely be imprecise, since it will be based on perceptions (perceptions of risk exposures and expectations about the costs).

A246- It's reasonable

B324- see comments above

B343- To a certain extent, but it may have less benefit for the banks as they already address risk in a very stringent way

B350- Same comment as above

B420- decrease in cost is not necessary in same proportion as decrease in risk, especially when you take every party's situation.
In confirming an l/c, the risk is first of all the solvability of the issuing bank, that is not decreased at all.

C518- Yes - but, probably not for a long time as our credit assessment of our importer and exporter customers is not currently based on any online system. We do use online data however for partner bank credit evaluations.

B510- Credit checking is completed by the exporter's bank

B511- not really. You have only taken in the accounts of counterparty risk but not necessary on the bank risk

B512- This model is applicable to importers and exporters more than to banks.

B513- yes but marginal

B514- theoretically speaking, if we assume that online systems will cause any reductions then the model is sound.

B515- It is not clear how decisions made by an issuing bank and steps taken by them will have an effect on the price a confirming bank may pay. Also the diagram seems inaccurate in assuming the cost in this scenario would increase as risk was reduced

C522- Unknown

C527- Yes, it seems reasonable to apply it to the various parties of the financial supply chain.

C574- The credit checking has a 'hard side' (indeed here systems integration of credit risk databases, overall enterprise risk-exposure and inter-financial exposure-and database' could reduce the overall risk)These risks would include sectorial, political, buyers, exporters risks evaluation. There is also a soft side linked to the experience and intuition of a risk officer, being able to recognize discrepancies or questionable financial statements, faulty contracts etc... How do you model this variable which is also very important... Then there is the discretionary decision of accepting higher risk for other reasons...

C573- No comment

Q5(c): Given the efficient frontier model, is the shape correct: that is, does the curve downward to the right correctly show the trade-off of cost and risk for an importer using A. payment in advance; B. documentary collection; and C. letter of credit?

A208- Payment in advance is low risk. Documentary credit probably involves less credit risk -- not 100% sure, since I'm not an expert in this area. Letter of credit is higher risk

A246- Can't say - empirical study needed.

B324- see comments above

B343- It is correct in this basic example

B350- But curve might be steeper in certain banking systems

C518- There are no relative values shown. You may want to add relative costs - for example, on average a documentary collection may be about four times the cost of an open account wire transfer while an LC may be eight to ten times.

B510- The different methods of payment pose different risks costs reduce as risks increase.

B511- yes

B512- A lot of different factors must be also taken into account such as Corporate risk, Country risk, the goods,

B514- Traditionally a l/c is more expensive yet more secure if documents are prepared in conformity. A collection is less expensive but bears the risk of non payment.

B515- I can't say it is an accurate reflection in all cases as cost is often determined on a number of factors and not just risk and the approach to pricing vs. risk varies from country to country and from region to region. Collections are generally not profitable for banks and they are offered as a service more to other banks than to import/export customers and attempts to increase prices to reflect the true cost of providing the service have not been successful. So the cost is not a direct reflection of risk or perceived risk. Also in many cases risk and price are determined more by sudden event risk or changes in demand for risk protection in certain countries so prices can shift dramatically more as a reaction to supply and demand rather than a real change in risk.

C522- Unknown

C551- I don't agree with A.

C574- Intuitively I would say yes...

C573- NO comment

Q5(d): Will the total cost to banks of doing business reduce enough to shift the efficient frontier down after they move trade payments online (do not consider the one-time-only set up, re-engineering and training costs here)?

A109- -25%

A117- 30

A208- I don't have a basis as a theorist and modeler to make this estimate. It's best left to people who are working in this area in industry.

A246- Yes - there is an incentive to invest in online trade finance as long as firm's scale is sufficient. The IT investment required will drive consolidation in the industry.

A254- 5 - 15%

B324- The investment for maintaining a e-enabled trade finance operation will lead to a concentration in the banking industry. Certain banks will outsource the operational part to banks with all the capabilities and will only maintain the customer relationship (white labelling etc.). Overall, the cost for doing trade finance business will come down (20-30%).

B343- Any estimate is pure guesswork at this stage, so my 'guess' is 10%

B350- No or quasi-no longer physical limitations

B420- 5%

C518- Based on our experience, the cost per transaction should decrease 20-25% by going online

B510- Would be guessing here and answer to this would be best obtained from companies already using Internet. Having said that I would expect to see the costs decrease further as the process is further fine tuned.

B512- It depends on the development cost and the market competition

B516- 70%

C503- Historically banks have NEVER decreased their costs, they simply find new services to add to the existing costs to justify them! I think it is a moot point.

C507- 0%

C527- decrease by 20% mostly by being able to allocate staff previously dedicated to keying in back-office transactions to more commercial client-facing roles.

C551- Oct-20

C555- I do not expect the impact to be great unless or until volumes reach a critical mass. Today, there is still huge resistance to change.

C574- In retail, the transaction cost of a simple transaction over the counter versus Internet shifted from \$1,50 + to less than \$0,10...This is the simplest model. The next model is the shift of business loans that are now shifted to credit card(Less than \$100,000) has also been reduced dramatically. Commoditization of small trade transaction, displacement of risk management from transaction by transaction to overall customer portfolio (Export credit line) will help to reduce dramatically the cost by 10 folds or more. For higher end trade transaction, this is another story. eg. Project Financing...should not be impacted...

B443- Don't know.

C573- No comment

Q5(e): Will the risk to banks of doing business reduce enough to shift the efficient frontier to the left after they move trade payments online (do not include the initial one-time risk of making a change to an existing system here)?

A109- -20%

A117- 50

A208- Same answer as above. The requested discrimination task is too much for me, as a non-industry insider.

A246- 27%

A254- 5 - 15%

B324- 25%

B343- I am not convinced that there will be any appreciable reduction in risk

B350- Intuitively, 10% to 30%

B420- 1%

C518- Small decrease - 5% or so.

B510- Same comments as above. It is a matter of establishing record with all parties and studying their trends.

B512- 5 - 15% it is very difficult to estimate

B516- 70%

C503- I do not expect risk to reduce at all. 0%

C527- 10%

C551- 20

C555- Very slow to change.

C574- I would think so if again they change their risk management approach and deal with consolidated and standardized sectors.

C573- No Comment

Q5(f): Do you have any other comments or suggestions on the model?

A109- No.

A117- We are not very familiar with econometric models

A208- How will you actually measure the model constructs? What can you do if you have them? What insights will the model offer?

B350- No

B420- adapt it to the situation of each party involved

C518- It's a good start.

B510- A greater relationships should be built between the dealing parties. Most of the financial institutions already have a correspondent banking relationship in place and these should be reinforced this initiative.

B514- The model is sound as long as the assumptions are sound. However, since the assumptions that online services will create any reductions is yet to be proven right, it is hard to accept the model as correct.

C507- Too much for a busy man to follow - sorry. Need to KISS

C527- The model reduces the study of effects of Internet systems on two dimensions only: costs and risks. Maybe another model could include other factors (e.g. speed of completing the transaction?)

C574- No

C546- NIL

C573- No

Q6: Finally, I would appreciate your comments on some of the issues raised by respondents to the final question of Round 2, about competitive effects.

Q6(a): Some respondents expect substantial additional regulation and taxation of trade and trade finance will counteract benefits gained by these online systems. What are your thoughts on the likelihood of increased legislative impediment to trade? And will the WTO be effective in limiting the effect of such impediments?

A109- The world's politicians are all of the same rapacious breed. They will conspire to milk the system for all the taxes that they can, thus compromising much of the efficiency gains. I withhold judgment on the WTO as an effective counter to this tendency.

A117- We don't expect increase of taxes: it is neutral.

The WTO can be effective in countries in which the new taxes will be raised

A208- No opinion, due to lack of knowledge

A246- IT will make the process more transparent and systems can handle it anywhere. The WTO will be supportive I imagine

A254- W.T.O. will not be effective due to a lack of enforceability.

Regulation and taxation depends strongly on individual situations in countries (elections, economic growth, etc.) and on multilateral agreements (e.g. EU)

B324- So far, none are discussed in-depth among the industry which seems to indicate that there are not too many of these issues.

B343- I accept that there will be an increase in taxation and regulation, but I suspect this will be outweighed by the benefits of online systems

B350- WTO should be instrumental in coordinating changes of trade, IT and legal systems at stake.

B420- Regulation : will be an evolution of the existing one; is already existing, I think and should not really be a problem.

Taxation : only the final customer will pay the difference, if any; but he will gain the larger competition

C518- That is an ongoing battle that will ebb and flow over time. In general, I think free trade will continue to prevail as most government bodies recognize that impediments (tariffs, quotas, etc.) ultimately create destructive imbalances.

B510- I'd probably agree with the above comments. For example, as the use of paper decline, so will the income for the government from that particular source, hence, the governments would look at introducing new tax etc to make up for the loss of income.

B511- This online system should also be refer to the UCP ALL banks dealing with trade are subject to it. Revision as to presentation of documents should be reviewed by the committee.

B512- It is very difficult to get consensus regarding the regulation of e-commerce transactions. I'm of the opinion that UNCITRAL and GUIDEC fill an important role as regards regulation. For more information look at www.iccwbo.org

B513- forget about WTO

B514- Additional regulations and taxation of trade will affect both online systems and traditional systems. Therefore, the burden of these extras will weigh equally on online and traditional systems.

B515- We do not share the view that additional regulation, etc. will be applied to trade finance processing.

C503- I agree that additional regulations will probably bring about additional constraints and costs. Re the WTO - I don't know, but wouldn't hold my breath for any 'effective' results.

C507- I have an optimistic view. Looking at the entire int'l trade transaction chain from buyer to seller including government and commercial service providers impediments will not increase. I think we have sufficient int'l co-op from WTO, WCO, ICC, UNCITRAL, ISO, and service providers to prevail.

C522- It is clear that a significant push to legislate the world trade due to Terrorism and economic factors - this is not so much a tariff barrier as a control point. Witness the US AMS legislation that caused enormous extract work for importing carriers to US destinations. I expect this trend to be seen in even sophisticated economy.

C527- I am not expecting changes in international regulation so substantial that they would affect the benefits highlighted above.

C551- It will take a lot of time !

C555- Whilst regulatory change will continue I do not expect it to impede significantly the growth of international trade. The WTO is effective in deregulating emerging

markets such as China which will only serve to increase cross-border competition and trade.

C574- I believe that governments will want to milk this cow given the high volumes of trade transaction and the money involved. Already, Canadian and US governments have introduced new customs regulations to increase security. It make sense to think that indeed things will get more complex before getting simpler. However, the pain will get to a point that only big players will be able to trade and this will have a major political backlash in SME driven countries like Canada...which then will force resolution of some of these issues...

C546- I don't think so as some countries provide incentive for paperless transactions.

B443- I don't think additional regulation will change things significantly. Any additional regulation is likely whether or not a shift is made to online systems.

C573- Yes I can see more government involvement in this area, especially as they see ways of generating revenue. The idea of having to obtain online permits for imports or exports, which generate a fee (payable by EFT), is particularly attractive. Even in the areas of genuine need for regulation (e.g. quarantine) I expect to see fees payable.

Q6(b): Some respondents expect the accessibility of new systems will bring more small importers and exporters to the market as users of trade finance and other online trade services? Do you agree, and what effects will that have on the industry?

A109- Yes, and it should provide more consumer choices and competition. This will also build a need for an analogy to <http://www.resellerratings.com/> that provides information about online vendors in the USA.

A117- We agree. It looks as a facilitation of trade tool in a large diversity of aspects.

A208- Agree. With the reduction in transactions cost will come participation by more smaller firms, who will think that it's economical. Main effect: greater adoption, push towards more standarization.

A246- The general effect of IT in trade finance will be consolidation and lager firms (look at concentration ratios in U.S. banking for a benchmark) Small firms will survive to the extent that they can specialize in narrow aspects of the value chain.

B324- It will certainly facilitate the access for SMEs to the global market. But the large corporations will highly benefit from workflow/process advantages. At the end of the day the market shares will probably stay at today's ratios.

B343- It will but only if they can overcome the current 'cost' barrier for trading fully online. This will have beneficial impact on large supply chains with multi-suppliers, distributors, and end-customers.

B350- I agree. It should benefit SMEs, always feeling neglected by banks

B420- I agree, and I think this could have positive effects as more competition; but also negative effects as not serious guys will appear, that a fact (dangerous for everybody)

C518- Small importers and exporters are generally forced to use LCs. What I do see is, once the transaction costs are wrung out of the product, large companies that are currently assuming the risk (self insuring) will return to LCs.

B510- Probably, however, the overhead will need to be considered. Furthermore, new businesses could be forced into using online methods due to other parties using this method.

B511- without encountering any fraud I believe it will be more faster and more efficient. Reduction workload will help people become more productive and effective.

B512- I don't think that we will see any larger increase in the number of Corporates that use the trade finance instruments but hopefully some of the smaller corporates will be more aware of the risk in export/import transactions.

B513- do not agree

B515- We think this is true for a number of reasons. The cost to banks will reduce so we can offer more services down market but we expect new product offerings other than LCs or collections will attract more clients from all sectors to undertake more business with banks and to do it electronically.

C503- As an Importer & exporter I believe that businesspeople will always prefer to deal with other humans when it comes to working abroad (at least in the initial encounters) and more specifically, dealing with financial issues. I could foresee the new systems would be useful to people who have been through the process already and are therefore, 'duplicating' a system.

C507- Agree. Efficiency.

C522- More choice, More Visibility lower margins, higher levels of customisation and build to order and a significantly increased volume in international supply chains. Expect world freight volumes to grow significantly during the next boom because of Internet visibility and large importers streamlining their supply side business connections.

C527- I agree with that. The technologies involved are well tuned for accessibility and ubiquity. More small companies will have access to the international markets and we could expect from that an increase of total volume of trades.

C551- To some extent yes, it will create more competition.

C555- Yes. agreed.

C574- My previous comments give you a point of view. I truly believe that smaller players will focus more on domestic trade or exporting to country with smaller barriers to entry !

C546- Yes, I agree.

B443- Disagree. Most likely small players will be kept out by the lack of knowledge of the way to use the systems etc. I don't see a significant change.

C573- I certainly see that small players will become involved. Never before has an individual been able to advertise his goods and services to so many people at such a small cost. The anonymity of the system will make it difficult to judge the size of the entities involved in international trade. There will be a need for reliable credit checks.

APPENDIX G — KEYBOARD TEMPLATE AND ARTICLE SUMMARY

Two printed items served as incentives to participate and continue to focus respondents on the research in progress:

1. a keyboard template sent with the original invitation,
2. a periodic newsletter summarizing recent articles in journals and trade press.

Keyboard Template

The following information was printed on the front and back of coloured card-stock and distributed with the invitation letters. It provided a token service to respondents by informing them of keyboard “shortcuts” to make their use of Windows more efficient. It also served as a reminder to respond to the surveys and participate in the discussion forum, and provided links to the places they could be found on the World Wide Web.

WINDOWS SHORTCUT TEMPLATE

(tape to keyboard or monitor)

⌘-C Open “Control Panel”	⌘-R Open the Run window
⌘-E Launch Windows Explorer	⌘-F1 Open Windows Help
⌘-F Search for files, pictures, etc.	⌘-tab Cycle thru Windows Taskbar
⌘-L Logoff Windows	⌘-break Open “System Properties”
⌘-M Minimise all windows	alt-F4 Close program
⌘-P Open “Print Manager”	alt-Tab Next program

Delphi Survey of Expert Opinion on International Trade Banking & Finance:

Information: <http://trade-doc.com/>

Registration: <http://trade-doc.com/JoinSurvey/>

Discussion: <http://trade-doc.com/Discuss/>

Username: (... from confirmation of registration)

With Compliments: This keyboard shortcut template might be useful to you if you use one of the Microsoft Windows operating systems. Many keyboards now have a ⌘ (or “Windows”) button next to the Ctrl key at the lower left of the keyboard. When that key is pressed (and held) while you press certain other keys, such as “E” for example, most versions of Windows will launch one of the common systems programs, such as the Windows Explorer in the case of ⌘ with E. There are several key combinations like this that short-cut more complex key or mouse sequences and this template is designed to place on or near your keyboard as a quick reference to some of the most popular combinations.

The web-addresses for the Delphi survey are also shown.

Kind Regards, Mark Dixon, UWA.

Summary of articles and trade press newsletter

A newsletter was created that included a summary of recent trade press and academic articles on the topic of international trade, finance and related fields. The thinking behind this was that many practitioners would not have access to academic writing on trade finance and many academics would not necessarily review the trade press. This summary was intended as a service to both types of readers, by using the indices available at the university to create brief abstracts of recent developments to show the value in both types of publication. An

example of the newsletter, the first one, which was issued at the beginning of Round 2, is reproduced on the following pages.

Digest of International Trade Banking

Vol 1, no 1 (July 2003)

a bi-monthly summary of articles about Banking for International Trade

Welcome

This digest of recent articles on international trade banking and related topics is being produced as an adjunct to the Survey on Online Trade Finance described at <http://trade-doc.com/>. The articles reviewed are from recent journals, many of which have academic authorship and hence may not otherwise attract the notice of practitioners in the field.

[The headings used here are the article titles as they appear in the source journals. They are followed here by the bibliographic details needed to locate the full article in its original source].

A new model for assessing the risk of banking crises, *Journal of International Banking Regulation*, London (ISSN: 14654830), March 2003, pp. 198-199, by Paul Clement.

Paul Clement of the Institute of Advanced Legal Studies, London, reviewed a *BIS Quarterly Review* paper: "Assessing the risk of banking crises" from December last year. The paper describes a new model for predicting banking crises developed by Claude Borio of the Bank for International Settlements and Philip Lowe of the Reserve Bank of Australia. The model analyses the developments of vulnerabilities associated with the onset of banking crises using only a small number of variables.

Picking up the gauntlet: Bank competition in China after World Trade Organisation entry, *Journal of International Banking Regulation*, London (ISSN: 14654830), March 2003,

pp. 247-253, by Bin Jiang, Peter Locke, & William Willette.

Bin Jiang (University of Texas at Arlington), Peter Locke (George Washington University), and William Willette (University of Texas) comment on competition in Chinese banking following China's entry to the WTO. They discuss the case of Ericsson dropping its Chinese banks in favour of Citibank China in March 2002. A "high quality account" changed over because the new entrant could offer more services specialised to international accounts such as service integrations which offer single-source banking, insurance and investment services. Factoring was a specific service cited by Ericsson that was available at Citibank but not at their former banks. Jiang, Locke and Willette expect Chinese banks to adapt quickly, adopting modern products and greater competition on service and price.

The road towards Basel 3, *Journal of International Banking Regulation*, London (ISSN: 14654830), December 2002, pp. 103-106, by Harald Benink.

Harald Benink (Chairman of the European Shadow Financial Regulatory Committee and Professor of Finance Rotterdam School of Management Erasmus University, Rotterdam) critiques Basel 2 - The New Basel Capital Accord. He suggests that the "Basel Committee reached agreement on a number of important issues without reinforcing market discipline in a meaningful way". He expects we "will have to wait for 'Basel 3' to incorporate a more

substantial form of market discipline as a complement to the Basel 2 focus on pillars 1 and 2".

How the US focus on tax shelters affects non-US banks, *International Tax Review*, London (ISSN: 09587594), April 2003, pp. 40-43 (features), by F Roy Sedore, Marnin J Michaels & Sahel Assar.

Sedore Michaels & Assar of Baker & McKenzie describe recent activities by the US Department of Treasury and Internal Revenue Service to focus on offshore financial arrangements. Summonses have been sent to offshore banks and other financial

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institutions for information regarding their customers as the IRS targets tax avoidance schemes. More summonses can be expected. Also reported is the US and Switzerland information exchange on financial arrangements which commenced in January this year. This is expected to expose US taxpayers avoiding tax and foreshadows similar treaties with other countries.

The USA PATRIOT Act: New adventures in American extraterritoriality, *Journal of Financial Crime*, London, October 2002, pp. 104-116, by Ethan Preston.

USA's International Money Laundering Abatement and Financial Anti-Terrorism Act of 2001 (Title III of the USA Patriot Act), reformed American money laundering laws with the hope of combating terrorist organisations via their financial networks. Preston argues that the Patriot Act may do more harm than good due to its provisions that affect financial institutions outside the USA. The first three (of five) provisions restrict domestic financial institutions' interactions and transactions with foreign financial institutions in various ways. The final two provisions directly affect foreign financial institutions through direct civil sanctions. Preston suggests these provisions may merely facilitate tax collection.

Japan's woes: Is bigger better?

Bank Director, Brentwood (ISSN: 10707611), 3rd Quarter 2002, p. 7, by L. William Seidman. Seidman contends that Japan's economy is still in serious trouble. He says that in an attempt to strengthen its banking system, Japan has helped its biggest banks to merge into 4 giant banks. It is too early to determine whether this group of bank mergers will result in a more efficient competitive banking system, but the evidence so far is not encouraging.

(see more articles on the following page)

3 international credit pros offer advice on improving operations,

IOMA's Report on Managing Credit, *Receivables & Collections*; New York (ISSN: 10748903), August 2002, pp. 3-4.

JP Morgan Chase's Bill Hindon, Gerling NCM's Jim Dezell, and Landmark Graphics Corporation's Kevin Chandler gave the following tips at the NACM Credit Congress. Chandler recommends: 1. don't get all international credit reports from the same agency, 2. get to know customers, especially those with large accounts, 3. visit the American consulate to get the details of the area and the customer, 4. see the credit department as a business partner with sales, 5. take a "blow and go" approach to first-time small-dollar sales, 6. be flexible - there is no one single approach that will work for all customers, 7. specify letters of credit that closely match contracts, 8. accept credit cards for all sales, 9. ensure staff stay up to date, and 10. spend time with export staff and the professionals who run the documentation together. Hindon commented on letters of credit including pricing. Dezell commented on credit insurance with principles that mirrored the earlier speakers.

Survey on Online Trade Finance:

<http://trade-doc.com/>

IMF politics keep Latin America on edge,

NACLA Report on the Americas; New York (ISSN: 10714839), July-August 2002, pp. 46-47.

This article suggests that IMF's refusal to bail out Argentina is creating problems for other countries in the region, particularly Ecuador and Paraguay. The IMF is sending a signal that countries with continual debt problems cannot expect to be given ongoing help, suggesting that "more economic destruction will make the recovery simpler and faster".

Managerial issues for expanding into international Web-based electronic commerce,

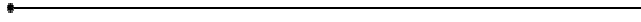
S.A.M. Advanced Management Journal, Cincinnati (ISSN: 07497075), Summer 2002, pp. 22-30, by Lannette A Sheldon & Troy J Strader.

Lannette Sheldon is an information technologist at Cargill Inc in Minneapolis. Dr. Strader is co-editor of the *Handbook on Electronic Commerce*. In this article they give several suggestions on the internationalisation of web site design.

Issues covered include: language needs, icon familiarity, the format of dates, time (and zones), telephone numbers, units of measure, currency and the accessibility of online forms. Transportation issues to cover include customs practices and duties, export licenses, insurance and others. They also address International content regulations, consumer privacy, advertising claims, and other legal issues.

APPENDIX H – EXIT SURVEY

The following is the text of the exit survey. It does not replicate the layout of the web version, which can be viewed at <http://trade-doc.com/Exit.html>. The web version has radio boxes to solicit choices, and textboxes for text entry.



Thank you for your input in the Delphi study. Here I ask for your comments on and preferences for future work in this area:

ID: Please enter your Survey “Username” or name:

(this is optional, but without some way to identify you I cannot respond to any requests you might have).

Q1. Were the survey and the reports from the survey useful to you? [Yes: No:]

Q1(a). What parts of the process or reports did you find useful?

Q1(b). What parts of the process or reports were done poorly?

Q1(c). What changes or improvements would you recommend?

Q2. Would you like to maintain contact with me and the other participants in this survey for future discussion, research and networking on trade finance related topics?
[Yes: No:]

Q2(a). What sort of ongoing contact would be useful to you? (for example, e-mail, mailing list, discussion forum, other?)

Q2(b). What topics of ongoing discussion would be useful to you?



APPENDIX I - PARTICIPANTS

The following respondents, shown here with their affiliation where appropriate, contributed their expertise to the three round Delphi Survey conducted in this research.

Thank you to you all.

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