

Trade facilitation and international logistics performance

by

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Working paper¹

1 Introduction

The importance of trade as a tool for economic development stands uncontested in economic theory. Trade currently represents 30 percent of the world GDP and is estimated to grow to 50 percent by 2020. The importance of trade as a proportion of GDP varies between countries. Smaller countries tend to be more dependent on trade than big countries. For Sweden, trade in relation to GDP is twice as important as for France and four times as important as for the US. For developing countries, increasing trade represents the most important potential for further economic growth. What has not been discussed very much in economic theory is trade efficiency. This question concerns the use of resources for initiating and operating the trade processes in relation to the resulting output in terms of volume of trade.

This paper develops a conceptual framework for trade facilitation with special focus on the interaction between trade procedures and logistics performance. Further, the paper presents empirical results from an exploratory study of barriers and frictions to Swedish trade with China in terms of the framework, and, in conclusion, it presents an agenda for trade facilitation research.

The main purpose of this research has been to create a first conceptual platform for research on trade facilitation and to identify empirically some barriers and frictions for

¹ The empirical data used in this paper have been collected by Anders Mixe and Cui Lianguang, Master of Science students in Logistics and Transport Management, as part of their studies under supervision of the author.

trade in order to learn about their nature and context. The goal in this first step has not been to try to analyse how the barriers and frictions could be reduced or eliminated.

2 What is trade facilitation?

There are several definitions of the term “trade facilitation” in the vocabulary of international trade organisations. The International Chamber of Commerce (IECC) defines trade facilitation as follows:

“...Trade facilitation is the simplification and standardisation of procedures and associated information flows required to move goods internationally from seller to buyer and to pass payment in the other direction” (Raven, J., former president, IECC)

Trade facilitation, according to the IECC, is not just a matter of improving one area of trade activities. It targets the growing range of all controls and restrictions being implemented at national borders by governments and their authorities, e.g. security, licensing, certification, restriction of payment procedures etc. ICC states that modern and efficient border controls do not just facilitate trade. They also improve security and increase revenue collection. In definitional terms:

“Trade facilitation focuses on improvements in efficiency of the processes associated with trading in goods across national borders. This includes the adoption of a comprehensive and integrated approach to simplifying and reducing the cost of international trade transactions, and ensuring that all relevant activities take place in an efficient, transparent and predictable manner, based on international norms, standards and best practices” (ICC).

The WTO has a slightly different focus in the following definition:

“Trade facilitation is the simplification and harmonisation of the activities, practices, and formalities involved in collecting, presenting, communicating, and processing data required for the movement of goods in international trade.”²

These definitions all reflect important aspects of trade facilitation. However, they are formulated by international trade organisations from a supra-national perspective. They do not explicitly recognise the interaction between private and public activities in the trade process, and they do not potentially cover intra or inter company activities and processes that might be improved in order to realise the overall goal: to make trade more efficient and effective. In this paper the following working definition is suggested:

Trade facilitation is the elimination, simplification or harmonisation of administrative barriers and frictions that reduce efficiency and/or effectiveness in the initiation and operation of bilateral trade processes between partners in two different countries.

² OECD, 2003a

In this paper, the term "trade barrier" relates to a significant impediment or difficulty to trade, but not an absolute blockage, whereas "friction" has the meaning of less serious, but still costly factor.

3 Potential of trade facilitation

The World Bank regards trade facilitation as an essential component for overall success in economic growth and development. The UN estimates the potential savings from trade facilitation to be some USD 490 billion (UN/CEFACT BPAWG meeting, Geneva, 2001). This amount is currently a deadweight loss that does not benefit Governments, companies, or individual citizens.

Various estimations have calculated the transaction costs of cumbersome trade procedures. One study estimated the transaction costs to range between 2.5 and 15 percent of the value of traded goods³. The lower limit would give a saving potential of 325 billion USD on a global scale. Another study has estimated the entire trade transaction costs at 7–10 percent of the value of world trade, where trade facilitation points at measures could reduce the costs by 25 percent (UNCTAD, 1994). Further, one study points at benefits from trade facilitation of USD 377 billion globally on an annual basis.⁴

Estimating the potential of trade facilitation in general terms is of course a very difficult undertaking. The studies cited above should be seen as highly approximate attempts. They are non-transparent and they use vague definitions, and it is not clear what they do cover and what they do not cover. They do not seem to measure all the effects of trade barriers and frictions such as the value of lost trade. However, one thing seems to be obvious, the potential of trade facilitation in monetary terms is enormous.

4 Conceptual framework

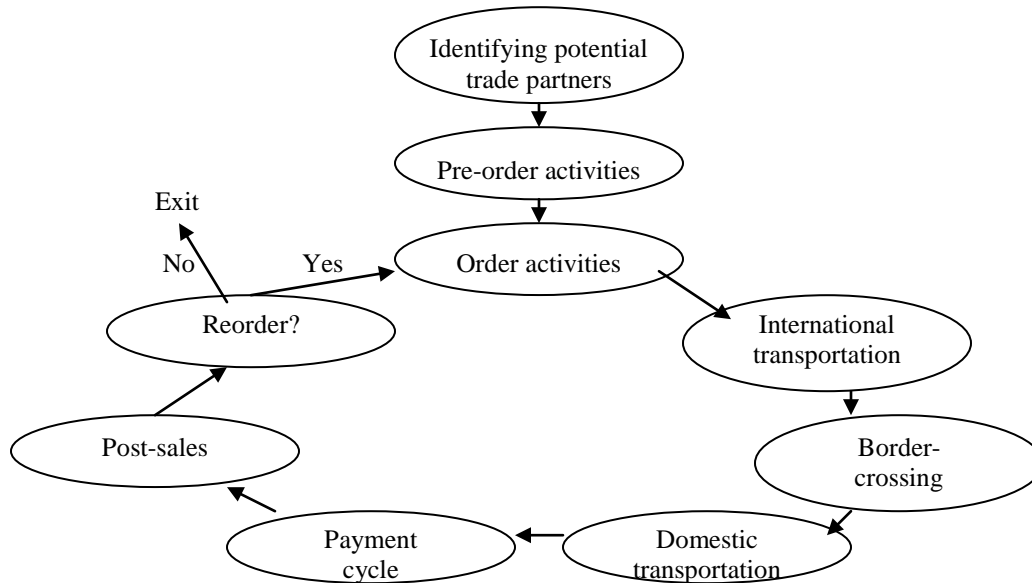
4.1 Trade chain

The initialisation and realisation of international trade between companies is described here by a sequence of interdependent activities called the trade chain. Figure 1 presents a model of an international trade chain. The activities are described below.

³ OECD, 2003 b

⁴ World Bank, 2002

Figure 1. International trade chain



Identifying potential trade partners is a matter of traditional international market research and promotion. It is at present mainly left to the market. Consulates and Chambers of Commerce can give some official help. In the future, governmental programmes for standardised systems of e-business initiated by supra-national organisations may be developed and give support in this phase of the process.

Pre-order activities consist of selling and negotiation leading to a contract between seller and buyer. The seller is likely to contract a credit-checking agency to verify the credit status of the customer. There are two types of contracts that are important to keep apart, a one-off contract and a framework leading to a series of transactions.

Order activities are all administrative and procedural activities that are needed for carrying out the transaction, e.g. issuing documents, verifications, authorisations, etc. The order process involves administrative activities for both the buyer and the seller. Before the order is accepted by the seller, he will let a bank or credit-checking agency make a check of the customer's solvency if this has not been done before.

International transportation embraces the movement of the goods from supplier to the port or frontier station of the importing country where the consignment is unloaded. It involves transport intermediaries such as forwarders, carriers, ports and also insurance companies. The contract states whether it is the customer or the supplier who is responsible for the goods during transport and, thus, for the cost of insurance. Insurance is not mandatory in legal terms, but necessary in international business practice.

Border-crossing includes all inspection and protectionist measures taken by countries at their borders. The measures are carried out mainly by governmental authorities such as customs, tax bureaus, inspections offices, health authorities, and agricultural authorities. Customs and other authorities must enforce government regulations, but they should, at the same time, minimise barriers and frictions to legitimate trade. The central body is Customs, which checks documents and goods (incoming and sometimes outgoing). It is closely connected to port management.

Domestic transportation is the movement of goods from ports or frontier stations to customers. This is a less complicated activity than international transport, but more or less the same actors may be involved.

The payment cycle normally starts when the supplier has accepted the order. The customer makes the necessary arrangements to pay the supplier through the banking system on completion of the contract. One common method is to use a letter of credit (L/C) to guarantee the supplier payment.

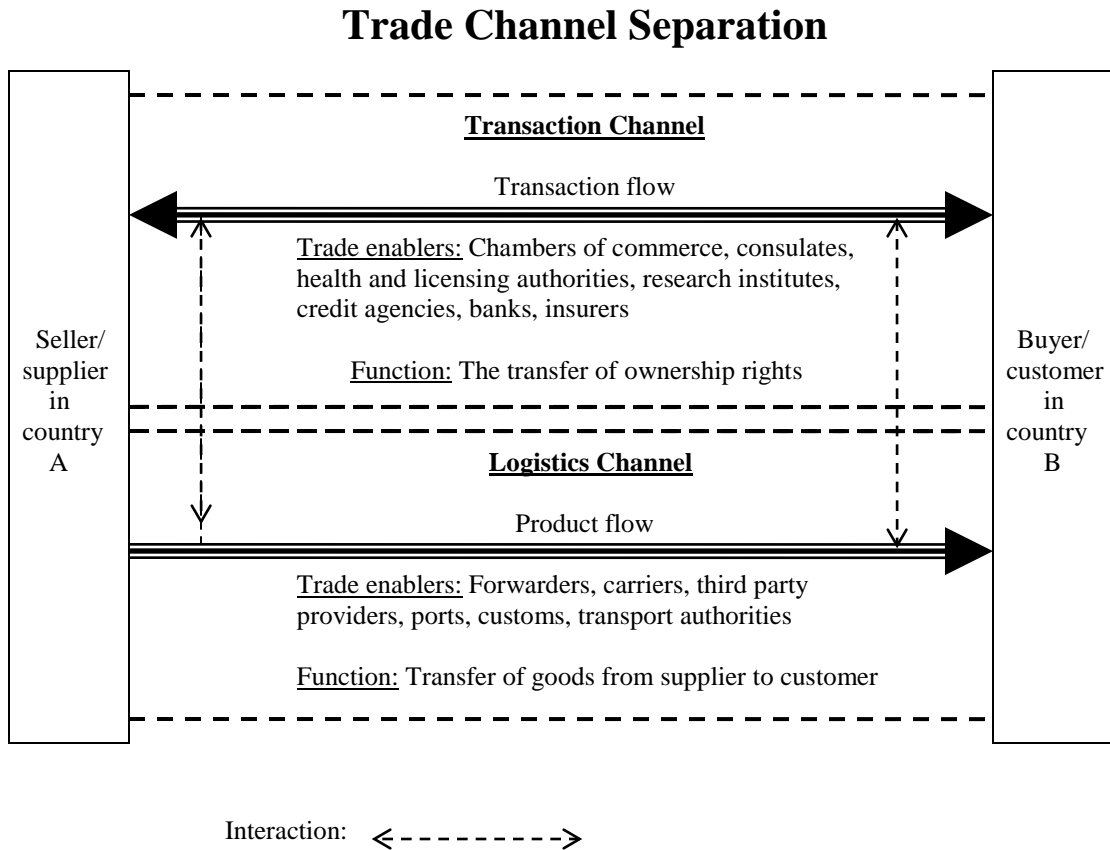
Post-sales activities take place after the buyer has received the goods and the seller has received payment. They may involve after-sales service, supply of spare parts, guaranty fulfilment, temporary replacement of products, product tracing, etc.

4.2 Trade channel

The system of organisations involved in the international trade process between seller and buyer, and including both, is called a trade channel in this paper. Trade chains are carried out in trade channels. The trade channel has a clear origin and destination. It is conceptually useful to separate the trade channel into two sub-channels, the transaction channel and the logistics channel.⁵ The function of the transaction channel is the transfer of ownership rights from seller to buyer. It consists of activities normally called marketing, promotion, buying, selling, etc. The function of the logistics channel is the transfer of the goods between the supplier and the customer involving activities such as transportation, storing, handling and the related information flow plus various support activities. Figure 2 illustrates what is here referred to as trade channel separation.

⁵ Channel separation is a theoretical concept used in logistics theory and in marketing channel theory, e.g. see Bowersox et. al., 2002

Figure 2. Trade channel separation



5 Structuring the potential for cost reduction from trade facilitation

The value of trade facilitation derives mainly from three sources: transaction channel cost reduction, logistics channel cost reduction and reduction of lost trade.

5.1 Transaction channel cost reduction

The potential for cost reduction in the transaction channel lies, in general terms, in national elimination, simplification and standardisation of trade related requirements and activities and in international harmonisation and standardisation. Realising these general objectives will increase the internal efficiency of the transaction channel through simplification of the organisational structure and also reduction of the resource consumption from remaining activities. Such a transformation will also facilitate the use of much more advanced technology such as information and communication technology, which will drastically increase the potential. All these effects could be called direct

effects of trade facilitation. However, the indirect effect from the transaction channel on the logistics channel is probably more important as a potential for cost reduction. This effect lies in the time dimension.

5.2 Logistics channel cost reduction

The interaction between the transaction channel and the logistics channel can be perceived as working through the order cycle. In this context, the order cycle can be defined as the time period between the first idea of generating an order from the customer until the customer has received the shipment and been able to make it ready for use. It may also be called customer lead-time. It is well established in logistics theory that the order cycle is an important cost driver in any logistics system. In many cases the impact on the logistics costs in an on-going logistics flow will depend on two lead-time parameters, μ_L , the expected lead-time, and σ_L , the lead-time standard deviation. There is a strong positive association between these two cost drivers on one hand, and logistics costs on the other.

Firstly, there is always the cost of stock in transit, the dominant part being the cost of the inventory investment. This cost is proportional to the actual lead-time and on average also proportional to the average lead time. In order to get the total potential of trade facilitation, the term of credit should be added to the lead-time. For certain time sensitive products, long and uncertain transit times may influence costs of obsolescence.

Secondly, if the product in question is stocked at the customer before sale or further manufacturing, the need of safety stock will depend on both μ_L and σ_L , with σ_L being the most important parameter. Relatively simple inventory models can be used for calculating the cost impact of average lead-time and lead-time variability.⁶ The safety stock, to which the capital cost of the inventory investment is proportional in model terms, can be expressed as

$$(\text{Safety stock}) = (\text{Safety factor}) \cdot \text{SQRT}[\mu_d \cdot \sigma_d^2 + \mu_d^2 \cdot \sigma_L^2] \quad (1)$$

where μ_d and σ_d are the average demand and standard deviation of demand from the customer's demand system. If lead time impact is not absorbed by safety stocks, the customer will suffer from high shortage costs. Buffer stock at the supplier may also depend on lead time variability. If the product is used directly for manufacturing without storing, e. g. in JIT systems, there will be similar consequences in terms of costs of changing production plans or accepting shortage costs, although the relationships may be more varied and complicated.

Thirdly, there are other logistics impacts from long and uncertain lead-times as well. Express transportation not planned for may be needed from time to time. A very important reason for using air freight is failure in production planning due to unexpected,

⁶ An elementary description of inventory costs and inventory decision models can be found in Stock and Lambert, 2001.

long lead-times. Another impact is product obsolescence or product quality costs of time sensitive products.

The lesson from logistics is quite clear. The contribution from trade facilitation must be to reduce average lead-times and lead-time variability and to make lead-times more predictable. If lead-times are made predictable, the standard deviation of the lead-time will vanish in practice in the simple safety stock model above, which illustrates the importance of predictable lead-times.

5.3 Value of lost trade

The value of trade that has been lost or delayed because of complicated and unnecessary trade procedures is extremely difficult to estimate. It has negative consequences for companies as well as for nations, and it is supposed to be more common among small and medium sized companies. As a dynamic force, lost trade in one direction between two countries will imply a future loss in the other direction as well and hamper economic growth of both countries.

6 Dimensions of trade facilitation

In developing trade facilitation as a research area, it is helpful to try to define some key dimensions for trade facilitation. The purpose of specifying these dimensions should be to find conceptual instruments for revealing and categorising relationships between identifiable process characteristics on one hand and potentials for cost reduction on the other. The emphasis will be put on logistics channel costs, while transaction channel costs will be mentioned more briefly (except for the costs of credit terms). The dimensions proposed here can be interpreted as goal dimensions for trade facilitation strategies. They also, at the same time, represent workable principles for trade facilitation. Six dimensions are described below: Simplicity, consistency, transparency, security, impartiality, and correction.⁷

Simplicity is about eliminating unnecessary or outdated requirements from government authorities such as requesting information that is already available to the authorities, or requesting the same information more than once for different recipients or purposes. Simplification also relates to standardisation of the format of information requirements to adapt to business practices. National simplification and bilateral harmonisation could have a great positive impact on order-cycle duration and variability and on internal efficiency in public organisations as well as in the trading companies and various intermediaries in the trade channel.

Consistency means that requests and applications from trading partners to authorities as well as other transactions between authorities and companies related to trade should be processed in a uniform way so that the participants in the trade process know what to expect as regards duration, information requirements and fees. Measures in this direction

⁷ Most of the principles developed here correspond to similar principles in OECD, 2002

will contribute to reducing order-cycle variability and, in consequence, also improve order-cycle predictability.

Transparency is created by making information on requirements, procedures, operational aspects, and trade support services systematically available and accessible to all participants in the trade process. This is specifically relevant for government authorities, but also for trade enabling intermediaries and the trading companies themselves. Improved transparency will improve the predictability of the duration of the order-cycle and thus, in a technical sense, reduce the lead-time uncertainty. Besides that, increasing the transparency of a process will lower the costs of producing, collecting, transmitting and processing information and documents and also reduce errors and improve document quality. This is of course beneficial for the internal efficiency of trading partners and other actors.

The security dimension concerns establishing an acceptable balance between governments' measures to prevent unwarranted flows of goods (and people) across borders and at the same time minimising obstacles to legitimate trade. The awareness of the security dimension in international trade has dramatically increased after the tragic events of 9/11. The objective is to increase safety for countries and their citizens, the means are being to make customs more efficient by using risk assessment, more efficient procedures and advanced technology. Side effects of measures against terrorism are increasing the probabilities of discovering fraud, criminal activities and corruption.

Impartiality is about ensuring a non-discriminatory and uniform application of all trade related regulations, procedures and practices irrespective of nationality, place of origin, entry, exit or destination, and also irrespective of ownership of consignments, or means of transport. The concept of impartiality also covers counteracting bribery, corruption and the handing out of favours to friends. This is relevant to both public organisations and private companies. Improving impartiality means reducing order-cycle variability in a logistics perspective and also improving efficiency and effectiveness of the trade process in a more general perspective.

Correction involves the availability of appropriate mechanisms for government supervision of trade authorities' administrative actions and the possibility for trading companies to appeal against administrative actions and interpretations of existing regulation of trade as well as the general procedures to be followed. This applies to private actors as well. The institutional mechanism for correction can be regarded as an instrument for improving progress in the other dimensions described above.

7 Empirical results

The empirical data were collected in an explorative interview study during the fall of 2004 using unstructured interviews with well informed informants from companies and various governmental organisations. The non-probability sample consists of 44

respondents from Swedish companies having establishments in China, 12 respondents from companies in Sweden trading with China, 9 respondents from Chinese governmental authorities, and 2 from Swedish authorities.⁸

The results are structured according to the trade chain and analysed in terms of the principles of trade facilitation in order to test the conceptual framework which also guided the design of the interviews:

7.1 Identifying potential trade partners. Pre-order activities

- For many companies, identification of trade partners means that they have to establish a business in China. In order to do so they are required to interact with numerous governmental authorities. As the authorities tend to require more or less the same information from the applicants, enhanced communication among the authorities using the same data base would improve simplicity and transparency.
- Capital requirements for entering the Chinese market may exclude many SMEs, which tend to start their Chinese operations as Business Support Offices (BSO) at the Swedish Embassy Trade Office or as representative offices. BSOs and most representative offices are restricted to promotional activities as they lack a business license, which is required for conducting business in China, e.g. to open bank accounts and to invoice. Enterprises lacking the permission to invoice may either invoice from their home country or through a Chinese agent. The latter will charge 7-10% of the invoiced value. These conditions are not in accordance with principles of simplicity and impartiality.
- SMEs are frequently discriminated against in terms of capital supply. High collateral requirements to get loans force SMEs to abstain from trading.
- Due to culture, commercial contracts are not standardised. Many contracts are written in both English and Mandarin, which require formal knowledge in both languages for protection against hidden messages and pitfalls. This is especially important for new types of contracts. These conditions are not in line with the principles of simplicity, consistency, and transparency.
- The majority of Swedish enterprises have experienced poor quality when trading with Chinese suppliers. Often, this depends on enterprises' lack of information regarding suppliers' performance records. There are contractual measures aimed at preventing poor quality. However, they tend to favour the Chinese supplier, and there is no functioning dispute settlement mechanism in China. This represents another violation of the principle of impartiality.

⁸ The study was carried out by Anders Mixe and Cui Lianguang, Master of Science students in Logistics and Transport Management, as part of their studies under supervision of the author of this paper. Their study is reported in Mixe and Cui, 2004. The present chapter is based on their results.

7.2 Order activities

Characteristic of trade with China is the excessive document requirements when securing payment. These requirements derive from the lack of trust between participants in trade. Chinese banks often demand additional enclosed photo copies of entire sets of documents which implies that each set of documents seldom contains less than 100 pages. Document requirements are not always specified from the beginning. To fully comply with the demand for documents from the bank may take 15-30 days. Clearly, principles of simplicity and transparency are relevant for improving payment procedures.

7.3 International transport

International transport is understood here to include departing ports or airports before the international movement and receiving ports or airports after the international movement. The international sea or air voyage has a long history of development and works satisfactorily. However, Chinese ports have a potential for improvement.

Port authorities in China have monopoly on all port activities. There is a lack of harmonisation between ports in China, and they have freedom to set service fees. Port authorities may occasionally use their monopoly power to discriminate between customers. Container inspection is done manually instead of automatically, which leads to different throughput times for inspected in comparison with non-inspected containers. These conditions, together with the lack of harmonisation between ports, are not in line with principles of transparency and impartiality.

7.4 Border crossing

- The Chinese customs is a powerful governmental authority. Despite laws regarding its conduct, there is no correction mechanism for customs activities.
- The Chinese customs has taken several measures in order to increase both communication and accessibility for declaring enterprises. However, most measures taken have overlooked the language barrier. Regulations and compliance measures are carefully explained in detail, but not in English, thus violating the fundamental principle of transparency.
- Trade partners seem to be profoundly ignorant about customs regulation, procedures, and behaviour. This ignorance adds to the lack of transparency and simplicity as perceived by the clients of the customs, the trade partners.
- The risk assessments of the Chinese customs are divided into two procedures: assessment related to documents and assessments related to inspection. Declaring parties are risk assessed based on historical records and volume into seven categories. The result of this statistical procedure is that SMEs will acquire low status due to the fact that they will never obey the law of large numbers,

regardless of spotless performance records. The principle of impartiality is in jeopardy.

- Procedures regarding VAT refund and currency conversion are not working according to principles of simplicity and transparency.

7.5 Domestic transport

- Domestic transports in China are outsourced to forwarders or 3PLs. In order to utilise economies of scale, they try to consolidate shipments to full loads on trucks, freight cars and trains. This prolongs transit time for some of the shippers and gives low transparency for trading shippers.
- Load carriers such as pallets are not standardised in China. This leads to lower than necessary utilisation of space in containers and other major load carriers. When consolidating shipments, co-loading implies balanced loading into load carriers of shipments differing in weight and volume. This is difficult to accomplish and, therefore, the frequency of goods damage is high. In terms of trade simplification, consistency is lacking. There is a serious need of insightful standardisation.

It seems to be possible to improve domestic transportation in China by standardisation and by differentiating the transport service offer to shippers.

7.6 Payment

- Lack of trust between trading enterprises in Sweden and China increases the risk of delayed or non-payments. The lack of trust derives from cultural differences, geographical distances, and lack of sufficient communication.
- An important reason is the trading enterprises' lack of trust in the ability of the Chinese legal system to protect them in case of non-payments. Disputes may firstly be solved between buyer and seller, secondly between banks involved, and thirdly in Chinese courts. The principle of correction is not working constructively.
- In order to reduce the risks inherent in the payment process, the L/C payment instrument is predominantly used between legally independent business partners. The L/C fulfils the requirements according to the principles of consistency and transparency, and it has shown to lead to faster payments. It also serves to secure the manufacturing phase, if being issued before the start of manufacturing.

- However, the L/C leaves something to be desired in terms of simplicity. The often complicated and difficult terms lead to large bank fees and costs of internal work for trade partners.
- Chinese banks discriminate against SMEs due to the fact that bank commissions are based on the transacted value, but require the same amount of work regardless of the sum involved. Further, the payment procedure is complex, since it requires several authorisations by various governmental authorities. Also, payment from China in foreign currency has to be converted. The conversion procedure seems to be an analogue duplication of the payment procedure. Particularly for SMEs, the application of principles of simplicity and impartiality should be improved.

The payment procedures violate the principles of simplicity, consistency, transparency, impartiality, and correction. This state of things causes order cycles and associated payment cycles to deteriorate both in terms of expected lengths and variability. The lack of sufficiently differentiated and efficient payment procedures seems to be a very important barrier to trade. This calls for simplification and re-thinking on behalf of government and financial enterprises alike. There are large potentials for increasing the efficiency and effectiveness of trade.

7.7 Post sales

Swedish companies have reported that Chinese counterparts frequently wish to exclude after sales services guaranties in exchange for discounts on the contracted price. These demands derive from the Chinese culture in which companies buy products that are expected to have a very long or infinite service life. Therefore, the Chinese end customers do not include service costs in their calculations. This threat to trade marks has made some Swedish companies reluctant to use their own trade marks in that the Chinese market. Due to both culture and the limited time the Chinese market has been open, the awareness of most Swedish brands is low or non-existent. If costs of after-sales service are deemed to be too high, these Swedish enterprises will operate generic in order to minimise future brand erosion. One approach, in order to provide after sales service and, at the same time minimising the risk of damaging the brand, is to limit sales to certain geographical market segments. These observations underline that relationships between primary products and after-market products have to be considered when making decisions and negotiating contracts, which calls for transparency throughout the entire trade process.

8 Conceptualisation for trade facilitation strategy

At present, trade procedures in the Swedish – Chinese trade channel represent a rather complex system, at least when seen from a Swedish perspective. The empirical data seem to support the conceptual framework. This motivates some further development of the framework.

Trade channel separation appears to be a fundamental concept for the facilitation of international trade. In trade channels of today, transaction flows and logistics flows have very different contents and are operated by means of very different technologies. Flows can be moved with very different speeds, and the ease with which they can be manipulated physically in other dimensions also differs. Therefore, it is remarkable that they have not been separated more in practice. Each channel is designed as a sequence of activities that must take place in order for trade to take place. At present, the activities in the transaction channel and those in the logistics channel are strongly interrelated in time and space by managerial design. At the same time, activities in each channel are affected randomly by many factors, which make them vary somewhat independently of one another in the time dimension. Individual random variation in time together with tight coupling between activities are important causes of the long and unpredictable lead-times in international trade channels. Therefore, trade channel separation is a strategic prerequisite for trade channel facilitation.

The next step in a strategy for trade facilitation should be intra-channel transformation.

In the transaction channel, the compulsory sequencing of activities in specific orders should be abandoned in favour of free floating activities. This is possible if each activity can be carried out conditionally upon completion later of other activities to which it is related. This should be possible since each activity is handled with a go/no outcome. The introduction of a single window approach for information on the outcome of activities will make the entire process completely transparent for all actors in the transaction channel. This activity sequence transformation will make the transaction channel much more efficient and effective.

In the logistics channel, the sequence of logistics activities (transportation, storage, and handling) are given, but inspection activities do not have to be fixed in time and space if proper technology and proper system design are used. In principle, inspection of shipments can be made anywhere between location A and location B if load carriers can be sealed at A. A can be the location of the supplier and B the location of the customer, thus extending the port concept. Also inspection can be carried out continuously in time and space using electronic positioning and communication systems (based on GPS or Galileo) for locating load carriers and using electronic tags and RF technology in combination with load carrier sealing for inspecting load carrier content. These technologies make both continuous and postponed inspection possible, depending on the needs.

The final step in the trade facilitation strategy is to arrange intra channel activities in parallel as much as possible in order to reduce channel throughput times, and also to use available technology in both channels to shorten the duration of each activity. These intra-channel measures must be co-ordinated between channels, either by design or by market forces.

9 Research agenda

Trade facilitation represents an area for research that is extremely important and in which little has been done. This means that a traditional scientific approach to generation of knowledge seems to be appropriate.

The first phase of research should focus on explorative and descriptive research of trade chains. The main purpose should be to try to identify barriers and frictions in various categories of trade chains in different trade relations and, in particular, to try to describe these barriers and frictions in important dimensions. Trade chains could be segmented according to industry, finished or semi-finished products, consumer or industrial products, trade relations etc. The concepts of barrier and friction must be seen from the perspective of the trading firms in such studies.

The second phase should be explanatory research. What causes or explanations can be found of such trade barriers and frictions that have been identified in phase one? Can they be explained by factors such as culture, language, protectionism, technology gaps, history etc., or should answers be sought in combinations of several factors? How much can be explained by lack of knowledge and information on behalf of companies or authorities?

The third phase should be research aiming at estimating the potential for cost saving in trade facilitation and the value of lost trade. This research should try to estimate potentials for cost reduction in different cost categories and in the two trade channels, the transaction channel and the logistics channel.

In the fourth phase, when some descriptive and explanative knowledge exists, there is a base for allocating normative research. This could cover development of priority lists for action together with strategies for governments and companies to follow for reducing trade barriers and frictions.

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