Challenges of Global Trade and the Transfer to e-Enabled Business Models in the Swiss Socks Market

Roman Boutellier  
*ETH Zurich*, rboutellier@ethz.ch

Barbara Flügge  
*Otto-von-Guericke University Magdeburg & SAP Research*, bfluegge@sap.com

Marta Raus  
*ETH Zurich & SAP Research*, mraus@ethz.ch

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Roman Boutellier¹, Barbara Flügge², Marta Raus³
ETH Zurich, Switzerland¹, Otto-von-Guericke University Magdeburg, Germany and SAP Research, Switzerland², ETH Zurich, Switzerland and SAP Research, Switzerland³
rboutellier@ethz.ch¹, bfluegge@sap.com², mraus@ethz.ch³

Abstract
Recent research has acknowledged the need to shift from the traditional one to one e-enabled business model to a many-to-many one. With the introduction of the Internet in the 1990’s companies such as Blacksocks SA and Jacob Rohner AG suddenly found a mean and the environment to think about e-enabling their business models or even start a company purely based on that existence. Building on a wide range of analysis of the terms business models and e-business models, e-business models to our understanding depict a company’s capability to apply, use or even exist throughout the presence of an e-enabled environment. The internet itself is being seen as a family of tools, methodologies and concepts to represent the e-enabled environment. Currie and others are drawing the attention to value creation from e-business models and Joyce and Winch discuss the evolvement of a business model to become e-enabled (Currie, 2004). In contrast to their key findings, the EU research project ITAIDE and the underlying business cases in this paper go beyond. The argumentation and the conclusion we will infer in the paper show that e-enabled business models are much more than applying tools, methodologies through the simple existence of the Internet. Further than the reach of companies, collaborative and decent research environments such as ITAIDE allow companies and ecosystems to adopt from the research findings and transfer those into applicable and scalable e-business models.

Keywords: Business model, e-Business model, Global Trade, Ecosystem, eCustoms, Transferability

1 Introduction

Globalization is concerning suppliers, consumers, distributors as well as governmental institutions. Benefiting or suffering drawbacks from globalization with regard to business activities can be considered as the decision of the
individual enterprise, however a set of external factors add to that decision making process. Customs management is an essential part in dealing with globalization. The challenge affects business and governmental actors as well as technology providers and Information Systems (IS) solution providers.

The paper is grounding on the actual situation of global trade development assessed by the World Trade Organization (WTO, 2007). From an IS solution provider point of view, SAP conducted various studies on global trade evolvement and enterprise specific requirements on IS support for export and import processes (SAP AG, 2006a, 2006b). From an enterprise’s perspective, companies like Arla Foods assess the consequences of global trade onto strategic and organizational decisions through various market studies, sales and manufacturing specific analysis of product supply and distribution streams (Arla Foods, 2007). These are only two examples of a wide range of publicly accessible and internally intensively discussed implications of global trade from any trade partner’s perspective.

Implications on trade reach companies not only as of the introduction of the European Union for example. Major events in a company's orientation to expand nationally regionally and / or globally were based on the introduction of IS. A number of research efforts have been undertaken in the last decades to push IS research reaching out for implications, motivators, failures and successes of IS related deployment cross organizations; one example is the IS related research programme of the European Union (CORDIS, 2007).

Envisioning the field of potential research activities for global trade, a company’s involvement in any research activity will lead to the overall question what is in for the company. The paper aims to analyze the concept of e-business model transferring research results like at ITAIDE to enterprises not involved in the research environment. ITAIDE is providing a qualitative research environment focusing on electronic customs management (eCustoms) (ITAIDE, 2006). Drawing essential elements of research explicitly concentrating on transferability concepts, methodological considerations yield the approach how transferability might be conducted. The approach of business models is highly linked to IS research environments. Any company basically that is deploying IS has the opportunity to reconsider strategic decisions on adopting electronic business model elements or even to reconsider in strategically setting up a complete new enterprise strategy. An overview of different definition of business models is being provided based on the studies of Rappa (Rappa, 2000), Petrovic et al. (Petrovic, Kittl, & Teksten, 2001), Timmers (Timmers, 1998), and Linder et al. (Linder & Cantrell, 2000).

The transferability efforts from ITAIDE to enterprises will be demonstrated exemplary on two Swiss enterprises working in the manufacturing and distribution business for socks.

The remainder of the paper is structured as follows: section 2 provides the background on the two main drivers of transferability for companies: it outlines on the one hand the evolvement of trade and its implications on export and import activities. On the other hand it provides an analysis of business model approaches in literature.
Section 3 dives into the methodological considerations of qualitative research as being applied at ITAIDE. It introduces ITAIDE from a research point of view and illustrates relevant qualitative research elements applied at ITAIDE. Furthermore it introduces the qualitative research approach making the audience familiar with the external cases of the two Swiss companies. The analyzed companies Jacob Rohner AG that is an experienced firm founded in 1933 in Switzerland, and Blacksocks SA, a young small Swiss enterprise founded in 1999. Both SMEs are involved in the socks market and have customers not only in Switzerland but also abroad and have to deal every day with foreign customers and stakeholders.

Section 4 incorporates the research elements and research field from the previous section into the case study approach proposed by Eisenhardt (Eisenhardt, 1989) concluding into a feasible transferability exercise. It envisions the researcher what comes next after the initial field work and it demonstrates to business partners in research environments that it is worthwhile to contribute in the one or other way to research endeavours. A joint journey of researchers and companies contributes to both angles of applied qualitative research. The paper concludes in section 5 with a summary of the key findings and an outlook into future studies considering the limitation of this paper.

2 Background on Drivers of Transferability

In this section we provide the background for the case being described in section 3. First of all an overview of the actual situation of the global trade is given. In the section 2.1 the global trade is described showing the data of its growth in the last 50 years and the enormous changes in the last decade. Especially, this section points out the need of a new eCustoms tool that may enable a more efficient and safer trade.

Secondly, in section 2.2 we present various definitions of the concept of “business model”. In this work the concept of business model is intended to describe and to define our case study.

2.1 Global trade

Global trade has drastically changed in these last years. The main issue that has to be overcome is the security of global businesses in order to ensure the international commerce. After the 9/11 four main changes can be identified in the global trade: globalization, regulatory pressures, government IT modernization, and the increased complexity (Webinar, 2006). Globalization is defined as the process of creating links between organizations and individuals that transcend national boundaries and are not subject to political interference. There are four main forms of globalization: markets, production, finance, and communications. Information technology, and particularly the internet, is considered to be an important catalyst in the globalization process (Heery, E., Noon, M., 2001). In this 50 years the global trade increased and is still growing rapidly as demonstrated by the value of World Merchandise Trade in 2003 (see Figure 1), which was approximately 15,000$ billions, recorded by the World Trade Organization (WTO, 2007).
The importance of global market has also increased and nowadays there is a trend in selling in new territories and sourcing from overseas suppliers. However, several times the structure of the supply chain is not ideal and errors within it may occur. The question that has to be answered is how to better manage the supply chain considering all the rules and regulations of all the different countries involved in the trade. Only after finding a solution of this challenge it is possible to have a more consistent supply chain that leads to more productive businesses and better bottom line results.

After 9/11 in the US and other terrorist attacks such Madrid 3/11 in 2004 or London 7/7 in 2005 more scrutiny in every kind of business or transaction is required. The national security has become tighter and new legal responsibilities on business have emerged. Therefore, companies need to strictly adhere to changing regulations or they risk costly fines. Examples of trade regulations and security initiatives are Export Administration Regulations (EAR), Customs Trade Partnership Against Terrorism (C-TPAT), Container Security Initiative (CSI), and Sarbanes-Oxley Act (SOA, financial control). Considering all these anti-boycott and anti-terrorism regulations, it has required a consistent effort since the world-wide businesses are driven by a large and considerable number of different rules. The customs process has always been a paper driven business. In the last decade there was a significant change of the manner to conduct commerce and nowadays all over the world governments are modernizing their system and expect business to communicate electronically increasing the demand for automation. Three main areas where these changes are visible can be recognized: Europe, US, and Australia. In the European Union there exists an eCustoms Initiative that has as main vision the implementation of a paperless environment for customs. This initiative started in 2004 and has 7 years time span: in 2004 was introduced the NCTS (New Computerized Transit System), in 2006 was introduced the AES (Automated Export System), in 2008 the AIS (Automated Import System) will be introduced, and in 2010 there will be one common electronic customs system for all 27 EU member countries. Not only Europe aims to have a standardized eCustoms system but also the US that introduced via AES the mandatory SED.
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(Shipper’s Export Declaration) and the ABI (Automated Broker Interface). Last but not least, Australia possesses and has already introduced the Integrated Cargo System (ICS) that is an electronic import system used for customs clearance and provides access to other government’s agencies through a single window.

All the changes presented above have increased the complexity in conducting commerce. A global trade corresponds to a large number of involved parties, document requirements, and charging regulations. Companies that want to trade globally have to consider diverse aspects and before starting conducting overseas businesses have to keep clear many factors. For example it is fundamental to know which laws and regulations have to be considered or how products are classified and duties are calculated. Other issues are essential before trading globally such as to know how electronic communication with customs authorities is ensured, how to keep track of the inventory in a bonded warehouse, if the goods qualify for trade preference program, and how the mitigation of financial risk is possible.

After mentioning the above discussed issues in global trade and analyzing the currently situation in three big areas of the world (Europe, US, and Australia), it is evident, that the customs handling process is becoming electronic and aim to a standardized solution. This standardized solution does not exist yet but many European and non-European funded projects are working on.

2.2 Definition of e-Business models

In 1997 the European Commission defined electronic commerce as “doing business electronically”. After ten years this definition is still valid but the technologies behind this concept have enormously increased. In his work Rappa (Rappa, 2000) provides a list of 29 different business models and divides it in nine categories. Rappa also points out that there is no single and unique definition for the concept of business modes. Petrovic et al. (Petrovic et al., 2001) simply describe a business model like a model of business. A business model provides the description of the logic of a “business system” in order to generate value that is intrinsic in the business process. Therefore, the business model describes the core logic of (a) business. This is also presented by Linder et al. (Linder & Cantrell, 2000) in their work where they define an operating business model as an operating business model representing the organization’s core logic of creating value.

The business model of a profit-oriented enterprise explains how it makes money. Since organizations compete for customers and resources, a sustainable business model supports the relevant activities and approaches of a company. It enables a company in succeeding by attracting customers, employees, and investors, and delivering products or services in a profitable manner. Only those business model components that are part of the essential logic are included, thus one enterprise’s operating model may look dramatically different from another’s.

In his work Petrovic divides a business model into seven categories, the so called sub-models. These categories are described in the following table (see Table 1).
<table>
<thead>
<tr>
<th>Business Models by Petrovic et al.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Model</td>
<td>Describes the logic of what core product(s)/service(s)/experience(s) are delivered to the customer</td>
</tr>
<tr>
<td>Resource Model</td>
<td>Describes the logic of how elements are necessary for the transformation process, and how to identify and procure the required quantities</td>
</tr>
<tr>
<td>Production Model</td>
<td>Describes the logic of how elements are combined in the transformation process from the source to the output</td>
</tr>
<tr>
<td>Customer Relation Model</td>
<td>Describes the logic of how to reach, serve, and maintain customers</td>
</tr>
<tr>
<td>Revenue Model</td>
<td>Describes the logic of what, when, why, and how the enterprise receives compensation in return for the products</td>
</tr>
<tr>
<td>Capital Model</td>
<td>Describes the logic of how financial sourcing occurs to create a debt and equity structure, and how that money is utilized with respect to assets and liabilities, over time</td>
</tr>
<tr>
<td>Market Model</td>
<td>Describes the logic of choosing a relevant environment in which the business operates.</td>
</tr>
</tbody>
</table>

**Table 1:** Business Models by Petrovic et al.

Last but not least it is important to mention Paul Timmers (Timmers, 1998) who defines a business model as “(…) an architecture for the product, service, and information flows, including a description of the various business actors and their roles; as well as a description of the potential benefits for the various business actors and a description of the sources of revenues.”

In his work Paul Timmers identifies ten different types of e-business models (see Table 2).
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<table>
<thead>
<tr>
<th>Business Models by Timmers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-shop</td>
<td>Promotion, cost-reduction, additional outlet (seeking demand)</td>
</tr>
<tr>
<td>e-procurement</td>
<td>Additional inlet (seeking suppliers)</td>
</tr>
<tr>
<td>e-auction</td>
<td>Electronic bidding (no need for prior movement of goods or parties)</td>
</tr>
<tr>
<td>e-mail</td>
<td>(collection of e-shops), aggregators, industry sector marketplace</td>
</tr>
<tr>
<td>3rd party marketplace</td>
<td>Common marketing fronted and transaction support to multiple business</td>
</tr>
<tr>
<td>Virtual communities</td>
<td>Focus on added value of communication between members</td>
</tr>
<tr>
<td>Value chain service provider</td>
<td>Support part of value chain</td>
</tr>
<tr>
<td>Value chain integrator</td>
<td>Added-value by integrating multiple steps of the value chain</td>
</tr>
<tr>
<td>Collaboration platforms</td>
<td>Collaborative design</td>
</tr>
<tr>
<td>Information brokers</td>
<td>Trust providers, business information, and consultancy</td>
</tr>
</tbody>
</table>

Table 2: Business Models by Timmers

All the definitions and the types of business models mentioned above are only referred to B2B processes and only take into consideration enterprises.

From our point of view the concept of “business model” can be also used for governmental relations and therefore it includes all the stakeholders who take part in a governmental process. In our case it seems to make sense to formulate a more specific definition of “business model” and therefore e-business model - that includes not only the pure business activities but also the governmental aspect. For our specific case we define an e-business model as an e-model based on an e-enabled collaboration platform. A model delivers products and services to the customers, who are both enterprises and authorities. A collaboration platform is a platform accessible by every stakeholder. Usually a collaboration platform has a defined focus on specific functions, such as collaborative share of information or interest in a specific business sector. Our collaboration platform should share information about the customs process to the stakeholders involved in the process, i.e. the exporting enterprise, the shipper enterprise, the customs office, and the tax office.
3 Methodological Considerations

3.1 Qualitative research to assess eBusiness model development from a given research environment

Researchers and IS research related associations (like the Association for Information Systems AIS) and initiatives have been investigating implications and motivators for eBusiness scenarios for business to business, business to government and government to government specifically (AIS, 2007; European Commission, 2005; ITAIDE, 2006; K. L. Kraemer, 1979; Myriam Fricke, 2006; United Nation, 2005). Failures and successes have been added to the researcher’s checklist as validity criteria especially in academic and public funded studies to get closer to possible answers how IS is being adopted (Henriksen, 2002; Iacovou, 1995; Ridley; & Ridley, 1999). Researchers surrounded and examined these factors by applying various research disciplines. In the following we focus on three disciplines: qualitative research methods (1), the research field (2) and research contexts (3).

First, Researchers adopted, applied, commented on and studied in proper research methods; research methods did grow with the evolvement of information systems and their richness in addressing multi-dimensional needs and acceptance criteria (markus 1997). Applying qualitative research as a method, it varies from action research, over case study research to ethnography. Qualitative research adopted concepts from social sciences and included social and cultural experiences. It allows to combine research methods on the other side (Baskerville & Wood-Harper, 1998; Myers, 1999, 2007; Orlikowski & Baroudi, 1991). A deeper discourse on the relevance of choosing which research method in IS research however is beyond the scope of this paper.

Second, drawing our attention to the key elements of IS research, the research field is affected by individuals, organizations and information technology. The researcher should consider time spent in the research field in relation to the depth of participants’ observation. Depth and closeness to participants’ environmental elements such as business partners and organizational units are influencing elements that determine a participant’s behavior and activity level during the undergoing research. The researcher collects data through interviews, questionnaires, documents and texts as well as observations in various instances, cycles and iterations (Myers, 2007). As Susman pointed out qualitative research such as action research is a dynamic cyclical process. Diagnosing, action planning, action taking, evaluating and specifying learning allow the most complete research cycle a researcher could aim for according to Susman (pp 588). Next to Susman’s cyclical elements, Lewin’s six stages and Eisenhardt’s theory on transferring case study results into theory, both provide guidance how to approach action research from the viewpoint of transferring research findings back to any field setting considered as appropriate (Eisenhardt, 1989; Lewin, 1947; Susman & Evered, 1978). Baskerville adds to their considerations the researcher’s (social) interaction with the observing participants and field as an environmental setting (Baskerville & Wood-Harper, 1998).
Another discipline is focusing of IS research on broadening the view and allowing social, cultural and inter-organizational as well as inter-institutional contexts. Under a variety of criteria that evolved the most emerging ones to the authors is cultural diversity in integrating IS in somebody’s daily work, supporting the need of an individual as well as of organizational units while expecting distinct IS related support levels in the same business context for diverse and collaborative environment (Myers, 1999, 2007; Zhang & Lowry, 2007) (Markus, ). Motivators to the individual as well as the organizational or institutional participant in the research field can be categorized in performance (drivers), pressures (limiters) and policies (enablers) related motivators amongst others (Henriksen, 2002).

The combination of the above outlined research disciplines leads to the following assumptions.

Qualitative research grounds validity based on the observed field topic, the data collection process applying various means and techniques as well as the determination if interpretation of data is appropriate or not. Due to time spent in the field, closeness and proximity to the observation related activities of the participants, it is up to the researcher to decide upon techniques, modes of analyzing and interpreting qualitative data. Medical researchers are discussing the validity aspect of research from a philosophical point of view (Malterud, 2001). Validity is also a crucial element in the concept of transferability of research results (Baskerville & Wood-Harper, 1998; Malterud, 2001; Susman & Evered, 1978).

Both, validity and transferability are tightly linked and interact with each other along the timeline of the research activities. The longer the researcher spends time in the field, the researcher might benefit from the depth of data, the duration of collection cycles and the ability to extend the evaluation period. The researcher benefits by including additional aspects and facets to the research and its analysis giving him time to transfer results back to the research field. Malterud calls this process internal transferability (Malterud, 2001). In the concept of external transferability, the researcher should consider how results are going to be transferred to other research environments, when and how. Appropriate means need to be determined by the researcher through discussions, testing cycles and the concept of iterations and feedback loops in the research cycle. Research projects such as ITAIDE allow intense business and field involvement to study IS concepts contemplating one or many aspects from above.

3.2 The Research Approach at ITAIDE (ITAIDE, 2006)

ITAIDE will address the problem of technological and political fragmentation of information systems for cross-border trade and international supply chains, which is due to lack of interoperability and collaboration between organizations. It will develop methods to create a network configuration of key actors (business, government, technology providers) to facilitate integrated eCustoms solutions. These solution methods include public-private interoperability, software tools for procedure redesign and a collaborative network model for network configuration.

ITAIDE empowers the researchers to bridge external enterprises to those directly involved enterprises at ITAIDE. Same applies for governmental institutions that are not part of the ITAIDE consortium that will be connected to those
governmental authorities such as Dutch Tax and Customs being directly involved at ITAIDE.

The research skeleton of ITAIDE consists of the following consecutive elements (figure 2):

![Figure 2: Research Skeleton at ITAIDE](image)

The research at ITAIDE is characterized by a cyclical process where the elements as outlined in figure work consecutively and allow a feedback from one element to the others. The research field at ITAIDE is defined along industry specific settings, called Living Labs. The Living Lab concept originated from the high tech industry and has been adopted as a research instrument to construct the research setting in a qualitative research environment such as ITAIDE. It allows the researcher to position himself in the research environment and take various viewpoints such as the one of an enterprise, a governmental institution, a technology provider or an individual participant in the research field (Bjørn-Andersen, Flügge, Ipenburg, Klein, & Tan, 2007; Frößler, Higgins, Kipp, Klein, & Rukanova, 2007; ITAIDE, 2006).

With respect to the applied methodology, ITAIDE is applying the UN/CEFACT methodology for standardized business process and business information exchange. The methodology is the underlying methodology in the research cycle for data and process modeling (Pentcheva & Stuhec, 2007; Stuhec, 2005, 2006).

UN/CEFACT itself is the United Nations Centre for Trade Facilitation and Electronic Business, the international body whose mandate covers worldwide policy and technical development in those areas. UN/CEFACT is a subdivision of UNECE. UNECE works closely together with other international standardization organization (ISO, IEC, and ITU-T) under the MoU (see: [http://www.itu.int/ITU-T/e-business/mou/index.html](http://www.itu.int/ITU-T/e-business/mou/index.html)). UN/CEFACT developed and promoted tools for the facilitation of global business processes such as UN/EDIFACT, the United Nations Directories for Electronic Data Interchange for Administration, Commerce and Transport, and the CCTS Methodology, UMM, and UNeDocs.1 The research approach at ITAIDE triggers business process analysis through the UMM methodology by examining, documenting and standardizing collaborative business processes in which the business information is commonly used and correctly interpreted by multiple research participants (UN/CEFACT, 2006).

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1 [www.uncefact.org](http://www.uncefact.org)
The research participants are aligned along four Living Labs representing the research field at ITAIDE. The research skeleton is being applied to all of the four Living Labs (figure 3):

![Diagram showing the alignment of research participants along four Living Labs: Beer, Paper, Food, Drug. Each Living Lab is represented by different types of entities: Governmental Institutions, Enterprises, and Technology Providers. The diagram illustrates the transferability of research and the cyclical processes within and between the Living Labs.]

Figure 3: Research Field at ITAIDE represented through the Living Labs

The research setting at ITAIDE gives the opportunity to provide internal and external cyclical research processes:

- Learning from and transferring research back into the field from one Living Lab to another or multiple ones
- Learning from one Living Lab, focusing on a specific industry, and transferring research to an external environment
- Learning from the participant category (governmental institutions, enterprises or technology providers) and transferring research across the Living Labs based on the category
- Learning from the participant category and transferring research to an external environment
- Applying and integrating transferability results back to the research field and exploring further research questions.
- Applying research results in the area of collaborative business process management and business model design for governmental and business partners

ITAIDE offers a wide field of research studies through its research concept of the Living Labs, like ethnographic studies of groups involved in the adoption of IS, industry specific research related differentiating from one country to another one or pan-European studies of trade specific IS solution development.
The following paragraph describes in detail the organizational structure, the supply and distribution chains of two Swiss companies from the manufacturing industry. Both companies are categorized as SMEs, small, medium enterprises.

3.3 **Introducing the external research environment: Blacksocks SA and Jacob Rohner AG**

3.3.1 **Assessing the external research environment**

Before the companies are being described more detailed we like to answer the following two questions:

1. How did the selection take place?
2. How did the data collection process take place?

Ad 1: The companies that are being introduced in the following are Jacob Rohner AG and Blacksocks AG. Both companies are not involved at ITAIDE, nor related to any participant at ITAIDE in the supply or distribution chain. Both companies are based with their headquarters in Switzerland. Both companies conduct export and import processes from EU member states and from non-EU member states.

Ad 2: A minimum of two interviews with employees and decision makers of each of the companies have been conducted by the researchers. The interviews were based on a set of pre-structured questions that guided the interviewees through the process:

1. Demographic information such as organizational structure, function of the interviewee
2. Descriptive part: supply chain and distribution chain
   1. Analysis of the ecosystem partners of the company (governmental, business and further partners) relevant to export and import processes
   2. Supply chain processes relevant to export and import
   3. Distribution chain processes relevant to export and import
   4. The structure of the descriptive part follows the elements of the UN/CEFACT modeling methodology (UMM) for business processes with specific relevance to cross-organizational processes
2.3 Normative part: assessment of critical success factors to the company relevant to export and import
   1. Pre-defined set of critical success factors
   2. Additional critical success factors based on provided feedback
2.4 Comment part
   1. For additional comments

In addition to the conducted interviews, both companies provided material in form of print outs, documentation of company strategy, process descriptions, additional organization related information and data files to the researchers based on a pre-defined checklist. Secondary data that is being published and accessible on the web has been collected by researchers directly.
Both companies provided material relevant for the following trade specific processes:

(2.1) purchase order process
(2.2) shipping process
(2.3) customs notification process
(2.4) export declaration process
(2.5) loading process to export products
(2.6) completion of loading and export initialization
(2.7) transportation to importing country
(2.8) goods receipt process at importing country
(2.9) goods receipt process at end customers
(2.10) statistical process for reporting and
(2.11) VAT collection process

3.3.2 Swiss Company 1: Jacob Rohner AG

Jacob Rohner AG is a Swiss enterprise founded in 1933 in Balgach, Switzerland. Nowadays the enterprise has 180 employees working to develop and manufacture socks. In average the yearly production reach 8 millions pair of socks which are distributed in Switzerland and other 22 countries. The customers of Jacob Rohner AG are SMEs but also larger retailers such as MIGROS or Jelmoli. Company growth is the result of qualitative products but also of an efficient supply chain which permits a shipment within Switzerland in only 24 hours. In foreign countries it takes longer but always not more than 48 hours.

The company has 150 knitting machines at its own production hall in Balgach, processing some 300 tons of yarn per annum. The socks with open toe section are dispatched (weekly 50’000 socks) direct from the knitting machine to a subsidiary company in Oliveira de Frades (Portugal) where this section is added. Once finished and packaged the socks are returned to the high bay shelving warehouse in Balgach. The warehouse holds around 2.2 million pairs of socks, a quantity that is required to guarantee a prompt delivery (Jacob Rohner AG, 2007).

As mentioned before, Jacob Rohner AG shows a very rapid growth. However, it has not been always like nowadays. In March 2000 the company was totally insolvent and bankrupted. The management of the firm did not understand that it was the time to walk away from their old established business model. According to Evans, P., Wurster, T. S. (2000) it is evident that only putting aside the presuppositions of the old competitive world and competing according to totally new rules of engagement is possible to be successful.

Until 2000 the company was antiquated, without any IT implementation, and everything was done manually. After the bankrupt the company was bought by Ylatex Holding AG (Lion Group) and drastic changes were done. The actual CEO of Jacob Rohner AG, Mr. Benno Gmür, came from Ylatex Holding AG and in 2001 started a deconstruction of the whole structure of the firm. With the arrival of the new CEO the business model of the company completely changed and after the initial deconstruction of the old model, a reconstruction took place: the production was centralized in Balgach, new high rack system was built providing space for 3.5 millions socks, and a new IT system was implemented.

As mentioned at the beginning, Jacob Rohner AG exports in 22 different countries even overseas such as Canada and Asia. The production takes place in the
factories of Balgach, in Switzerland, and the socks go to Portugal where they are knitted and packaged. In the warehouse every pallet is identified with computerized customs documentations. The documents for the identification are printed out at the warehouse and stick to the pallet. The logistic partner who transports weekly 50’000 socks to Portugal receives all the pallets identified with barcodes as explained before. The transportation company is in charge of the customs handling. Once the socks are packaged and ready for the sale, they will be sent back to the Swiss warehouse.

As said in the beginning of this section, Jacob Rohner AG exports in many countries. We analyzed the export process to Germany. For the export to Germany the logistic partner, the Deutsche Post (the German Postal Service), is responsible for the customs procedures and insures a transparent control at the Swiss borders of Basel. The identification of the pallets takes place using the barcode scanning and proving that the declared goods correspond to the effective goods on the pallets. As affirmed by the CEO Mr. Gmürr, there is no IT integration between Jacob Rohner AG, the supply chain provider, and the customs office. Figure 4 presents the example of the export from Switzerland to Germany.

![Figure 4: Supply chain flow of Jacob Rohner AG](image)

### 3.3.3 Swiss Company 2: Blacksocks SA

Blacksocks SA started its operation based on a simple, smart idea which consists in trading black socks for the male customer segment via the Internet. The company founded in 1999 is applying a single sales channel to date. The current ecosystem is characterized through a discrete business model. The customers themselves decide upon a pre-selected number of products. Blacksocks SA grew its customer base to about 30,000 customers, where 80% of them are Swiss customers. Besides Switzerland, Blacksocks SA delivers to further 71 countries. The customers order via a subscription service on the Internet. Payment is done via credit card payment.

The production, solely based in Italy near Milan, is characterized by mass production (black socks). The second generation family operation ranks amongst today’s most highly regarded sock makers. Workmanship characterizes a decent test cycle and production procedure before any pair of socks is leaving the manufacturing site: the highest quality yarns are used to produce the socks. They are dyed exclusively in certified Oekotex colors to ensure the dye will not harm
the skin. The final product is then knitted as one piece, sewn together in the upper-toe area and ironed. From every shipment of yarn that arrives at the factory, 2 or 3 pairs of "test" socks are produced. The rest of yarn shipment is then stored, until the test socks have been extensively examined. The testing is simple: the head of production himself wears the socks until they've gone through approximately 20 washes. Those socks are then compared to socks from previous series for chafing and color-fastness. If the test socks do not pass the test, the yarn goes back to the mill. Blacksocks SA is focusing on a pre-selected range of products: mid-calf socks and knee-high socks.

The packaging material is being produced in Switzerland and delivered to the assembly line, located in Switzerland as well. The end products are being delivered directly to the end customers in a pre-order format. Subscription based deliveries increased over the years to round about 100,000 deliveries per year in 2006. High delivery reliability and high quality products are characterized by a comparably high price segment where Blacksocks SA is positioning itself. Marketing wise there are two main characteristics of Blacksocks SA. First, Blacksocks SA is seeking direct customer response in its approach to market the product easing the way to remember that a new purchase might be needed: the ease of use by subscribing to a standardized product and to relief the customer that socks need to be renewed (regularly). Second, Blacksocks SA is focusing on a clear customer segment that is being addressed worldwide.

Electronic invoicing is conducted via online payments for end customers. Invoicing for marketing services and any other supply purchases are handled manually. From a tax and customs point of view Blacksocks SA will be considering how to tackle administrative efforts in the tax and customs handling such as VAT identification number, exception handling for cotton imports to the US if Blacksocks SA needs to promote 100% cotton socks or cotton underwear shipped in a larger quantity than today.

In the future Blacksocks SA is considering offering male underwear and it is already known that the product source will not be Italy. Import processes will start from India, the current delivery process from Italy to Switzerland might change as a combined delivery as a product bundle will increase the market share for Blacksocks SA. The assembly process might be located in Italy or in Switzerland.

By adding a new product segment, Blacksocks SA is extending its ecosystem and involving more business and governmental partners. The data and information handling is only IT related to a certain degree. Purchasing occurs 12 times a year handled manually by Blacksocks SA. The calculation is based on forecast automatically derived from delivery volume. The shipment handling is manually done as well. The simplistic process works in the current situation. The export process is conducted by the Swiss Postal Service and Local Postal Service to deliver goods to end customers. Regarding import processes, import shipments are coming from Eastern Europe via Germany (trucks shipment) and for new product segments from India for example. 25% of Indian shipments are airfreight shipments and 75% are sea shipment. Goods receipt at the end customer cannot be tracked, data cannot be proved. Complaints handling is currently handled via Hotline on a manual basis.
Another key characteristic of Blacksocks’ SA ecosystem is the lean organizational setup and the integration of 3rd party partners. Those, as illustrated in the following figure, take care of database maintenance, the payment server via a trust center, warehouse and stock management, sales and delivery.

![Organization structure of Blacksocks SA](image)

**Figure 5: Organization structure of Blacksocks SA**

Due to the current business model of delivering a pre-defined set of low cost and low volume products directly to end customers, Blacksocks SA is not requiring a specific need for customs handling for the current status-quo. Figure 6 presents the current export from Switzerland to the end customers. The recycling flow for outdated products and the packaging materials might look like outlined below.

![Supply Chain flow of Blacksocks SA](image)

**Figure 6: Supply Chain flow of Blacksocks SA**
Once Blacksocks SA will be executing new product lines, like the promoted underwear segment, and reaching out for a higher international reach, the company needs to consider customs handling that fits to its e-business model. Increasing volume in a larger number of countries will still require delivery reliability and a high satisfaction rate for first-time customers. Figure 5 presents potential export flows for a new product segment and potential direct shipment from Italy based on higher deliver volumes. The Recycling process has been excluded to various reasons. First, involving TexAid for the new product segment might not be applicable. Second, if Blacksocks SA introduces direct delivery from a production site, the TexAid support needs to be revised. The physical supply chain will be challenged in many ways to meet the data flow that is reaching new customers and subscribers before the actual product is being delivered. As speed is crucial, any obstacles in customs management will slow down the business and risk new market opportunities.

![Diagram: Potential Supply Chain flows of Blacksocks SA](image)

Figure 7: Potential Supply Chain flows of Blacksocks SA

## 4 Transferring Research by applying Eisenhardt’s Framework

### 4.1 Eisenhardt’s Framework

Transferability as outlined in section 3 can be conducted in a number of ways. The framework adapted for the outline purpose of this paper is the one proposed by Kathleen Eisenhardt (Eisenhardt, 1989).

The alignment of the research findings and the research approach at ITAIDE with the business cases of Jacob Rohner AG and Blacksocks SA is documented in the following paragraphs.

The framework is composed by phases, activities, and reasons. A simplified version of the framework is presented in table 3. This approach is useful to analyze the case studies considered in Section 3.
<table>
<thead>
<tr>
<th>Phase</th>
<th>Activity</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: Getting Started</td>
<td>Definition of research question.</td>
<td>Focuses efforts.</td>
</tr>
<tr>
<td></td>
<td>Possibly a priori constructs.</td>
<td>Provides a better grounding of construct measures.</td>
</tr>
<tr>
<td>Phase 2: Selecting Cases</td>
<td>Neither theory nor hypotheses.</td>
<td>Retains theoretical flexibility.</td>
</tr>
<tr>
<td>Phase 4: Entering the Field</td>
<td>Overlap data collection and analysis, including field notes. Flexible and opportunistic data collection.</td>
<td>Speeds analyses and reveals helpful adjustments to data collection. Allows investigators to take advantage of emergent themes and unique case features.</td>
</tr>
</tbody>
</table>

Table 3: Eisenhardt’s Framework

The following paragraph describes the alignment of ITAIDE’s research content to the Eisenhardt phases.

Phase 1: Getting Started
- Comprising the challenges and multiple perspectives of eCustoms development, the project aims to overcome difficulties in cross-border trade.

Phase 2: Selecting Cases
- The cases relevant for eCustoms derive from the Living Labs (Beer, Paper, Food and Drug)

Phase 3: Crafting Instruments and Protocols
- The data collection and investigation approach is carried out by a highly integrated team of academic researchers accompanied by technology, business and governmental partners.

Phase 4: Entering the Field
- The project is integrating academic research with on-site investigations, exploratory studies, action research and case studies. Field entry started January 2006. Field results are being published regularly on http://www.itaide.org.

Phase 5: Analyzing Data
- This phase is currently in process. Investigation and data analyze is being conducted in the first twelve months for the involved business partners, governmental partners and standardization partners, for business and functional Communalities, eCustoms related collaboration and its
implication on a eCustoms related Collaboration Platform as a newly introduced business model.

Based on the research disciplines being discussed in section 3, Blacksocks SA and Jacob Rohner AG represent the external research environment, see the following figure:

![Diagram showing internal and external transferability of research]

**Figure 8: Integrating external research cases into ITAIDE**

The following paragraphs will refer to the phases of Eisenhardt and outline the alignment to the two Swiss companies: Relevant to phase 2, selecting Blacksocks SA and Jacob Rohner AG adds another industry focus to the four living labs. The manufacturing industry specialized in the socks segment is distinct from the existing industries. Belonging themselves to the same industry sector, both SMEs however distinguish in sales and distribution channels and methods. Having in common the need to meet economic and financial objectives, the two selected companies need to focus as described by Ritter et.al (Ritter, T., Wilkinson, I. F., Johnston, W. J., 2004) on their managerial value. That value is related to competences of the organization to steer, interact and co-operate in a business related network. Thus, besides differentiating sales and distribution methods they still are facing the same challenges, including those of global trading.

Phase 3 has been applied to the extent that qualitative evidence is being derived from interviews being carried out by a team of researchers. Quantitative data complements the view on the range of the supply and delivery chains of the two enterprises.
Mapping Phase 4 of Eisenhardt’s theory to the Swiss cases, structured interviews have been conducted to assess Blacksocks SA and Jacob Rohner AG (see section 3). The mapping of the cases is based on the most relevant elements of a collaboration platform: business operational view, functional views and the interoperability concept.

Both cases comprise the applicability of what we learned so far from ITAIDE.

<table>
<thead>
<tr>
<th>Ecosystem of Jacob Rohner AG</th>
<th>Ecosystem of Blacksocks SA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transferring the eCustoms Model</strong></td>
<td><strong>Transferring the eCustoms Model</strong></td>
</tr>
<tr>
<td>Jacob Rohner AG will be able to apply the Multi National Company concept of eCustoms, based on the characteristics of their IT landscape.</td>
<td>Blacksocks SA will be able to integrate the ease of use of eCustoms for SMEs especially as the structure of the company is similar to those that have little IT infrastructure in place. Due to the outlined strategy of increasing the export ratio and launching a new product series, the export and shipping processes will shift the supply chain approach. Increased volume and faster access to the products require synergy effects in customs management based on easy-to-apply eCustoms.</td>
</tr>
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</table>

**Business Operational Views**

The main business operational views in the eCustoms arena are applicable for both enterprises. The business operational view based on the eCustoms concept describes the semantics of business data in business transactions and associated data exchanges. This includes the rules for business transactions such as collaborative transactions (agreements, mutual obligations and operational conventions) with suppliers, shipping companies and service providers as well as governmental partners. While the customer data management and payment processes are managed differently in the two enterprises, the rules for business transactions as outlined before, still apply. From a reporting point of view, externally required reports do not differentiate. Internally both companies will still execute reporting based on their reporting strategy.

**Functional Services Views**

The functional services views address the supporting IS related services to meet the mechanistic needs of interoperability. Both companies need to think about how they approach cross-organizational business processes, data, and message exchange. Three major interoperability topics affect each of the business partners in the as-is situation:
First, the semi-integration among distinct IS solutions and applications and the missing integration to e-mail, MS Excel and other detached packages limit the effects of IS investments already issued like at Jacob Rohner AG. Cost intensity is caused as well on multiple data entry such as manual data transfer from one document to a PC application for example. Data needs to be checked and approved in several stages of the business transaction. Some of the business partners key in data manually or fill in paper forms.

Second, both enterprises experience limitations in using governmental eServices. Accessibility of data such as the content of the Single Administrative Document from a European supplier is not easily provided to the supplier or the customs office. Technically, paper has to be exchanged, checked several times and re-submitted manually or via fax to the involved business partners.

Concept of Interoperability

Current non-interoperable IS solutions and manual efforts lead to the overall impression that IS is not facilitating but hindering business. Non-correct, semantically false identification of the relevant elements increases however the risk of missing semantically the related interpretation by the business partner and the transaction at all. The completion cycle of a business transaction will take too long within the two company ecosystems. Besides, especially in the case of Jacob Rohner AG and its business partner(s), they are confronted with major efforts in interfacing with various applications and IS systems.

The underlying most relevant characteristic of an eCustoms collaboration platform is the provision of easy-to-deploy and easy-to-access functionality for data, process workflows and documents. The concept behind that functionality is based on interoperable IS solutions (IDAbc, 2003). As the research team at ITAIDE is currently working on deployable prototypes, Blacksocks SA and Jacob Rohner AG will be able to participate in that transferability exercise too. The benefit to Blacksocks SA and Jacob Rohner AG will be measured against the following performance indicators:

- Decrease the average development time from concept via implementation to ramp up and runtime of a collaborative customs business process.
- Decrease the average planning and negotiation of interfaces and collaborative business processes to participate on the collaboration platform
- Adapt faster new requirements and be able to respond more efficiently to unforeseen changes in the demand of a new business circumstance (like a new sales region, new supplier environment or changes in the distribution channels)
- Build a dynamic environment with dynamic partners based on "just-in-time" supply and demand principles.

5 Conclusions

The cases of Blacksocks SA and Jacob Rohner AG illustrate how in these last years IS technologies and eCustoms initiatives have gained in importance. The massive penetration of internet in every kind of business transactions has changed
the vision and the structure of business models. Taking into consideration the supply chain structure of two Swiss socks producers, we illustrate the differences in conducting business and commerce of the two companies. The research field at ITAIDE provides substantial data and concepts that allow us to apply these to external research environments regardless industry, company size or region they are located in. The invitation process accommodates not yet in collaboration related research involved companies or other partners. There is still a road to go to be precise enough in the conceptual design of transferable IS solutions.

Assessing two companies that are not part of the industry and country setup of ITAIDE gave us the opportunity to compare at this point in time our first key findings and transfer those to Jacob Rohmer AG and Black socks SA. While being totally different in the market approach, the common public processes relevant for customs handling and shipping are similar in both cases. To meet critical success factors like high quality products delivered in a given period of time, sharing common information without multiplying data entry and data checks and being effective as possible to meet financial and economic objectives are relevant for both companies (as well as others).

The e-business model to facilitate global trade that will be elaborated within ITAIDE is supporting the growing need to integrate processes, data and messages seamlessly with business and governmental partners like in the case of Jacob Rohmer AG. It eases the way for product innovation and new market entry considerations like in the case of Blacksocks SA. We outlined relevant research elements that support the transferability and validity of research to external environments at the end. Feeding these results back allow the researchers to turn back the research clock.
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Contacts to Interviews

*Jacob Rohner AG*
Address: J. Schmidheinystr. 23, 9436 Balgach, Switzerland
URL: www.rohner-socks.com
Contact person: Benno Gmürr, CEO
Phone number: +41 (0)71 727 86 86
E-mail: benno.gmuerr@lionag.com

*Blacksocks SA*
Address: Hornbachstrasse 50, 8008 Zurich, Switzerland
URL: www.blacksocks.com
Contact person: Samy Liechti, CEO
Phone number: +41 (0)44 3898422
E-mail: samy.liechti@blacksocks.com