

An Efficient Customer Service: Finding a Balance between Self-Service Technology and Inter-Personal Interaction

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Abstract

Nowadays customers are often offered the possibility to interact with companies through a mix of self-service technology (SST) and inter-personal contacts. Demands of both cost-effectiveness and good relationships with customers trigger the need to find a balance between these ways to interact. The purpose of this paper is to identify requirements to be put upon a computer-based tool for generating knowledge about interactions between customer service representatives (CSR) and customers that then can be used to develop new SST or improve existing systems. The empirical base consists of recorded conversations between customers and CSR situated in a Swedish subsidiary to a multinational industrial company in the building industry. Methodologically, conversation analysis complemented with pragmatic action concepts for understanding the role of information systems, are used for analysing the conversations. The results show that it is important to consider both intra-transactional and inter-transactional characteristics of conversations in order to derive a computer-based tool.

Keywords: Self-service technology, inter-personal interaction, customer service, conversation, conversation analysis, information systems actability

1 Introduction

To listen to the customers is a well used phrase in the corporate world and sometimes something that is taken for granted. Why is this so important? Is it not enough to arrange solutions of communication where the customers can serve themselves and hope that majority choose that? More and more companies also introduce self-service technology (SST) in the interface between companies and customers and can save money by reducing the number of people in the front-line. The tendency that companies are reconfiguring the way they interact with customers is called the “the front-office revolution” by Rayport et al. (2005). An important factor that speaks in favour of a human-to-human contact is that customers’ evaluations and experiences often are based on specific interactions – service encounters with the companies (Bitner, 1990). A service encounter is the time-frame during which a customer directly interacts with service providers (Surprenant & Solomon, 1987). The interaction is a critical determinant of customers’ satisfaction with the service (Czepiel et al., 1985) and the contact employees can be the source of differentiation and competitive advantage for companies (Pfeffer, 1994). There are also risks with removing the human contact, for example a lack of human involvement if an error occurs, lack of personal relationships, reduced opportunities of additional sales (c.f. Dabholkar, 2000) and even reduced customer loyalty (c.f. Lindberg-Repo & Grönroos, 2003). There are also advantages with increased self-service. It can be lower costs of information registration due to a reduction of the manual work; increased security through fewer human errors; and added value to customers when access to information and trade increases (c.f. Lancioni et al., 2000; Porter, 2001). A balance between SST and inter-personal contacts seem to be appropriate. As Rayport et al. (2005, p. 68) mention: “The strategic question facing companies is how to effectively distribute relationship building roles between humans and machines in a way that capitalizes on the strengths of each.”

How can companies find this balance between contacts that could be handled through technology and contacts that should be handled on an inter-personal level? One way is to ask

customers how they perceive the service and what kind of interaction they want. Research about how customers perceive the interaction, the service and the company is quite common (c.f. Brown et al., 1994; Svensson, 2006). In this study we suggest another approach and that is to study the actual interaction patterns and especially those in the interface between customer service representatives (CSR) and customers. Salomonson and Lind (2006a) argue that a detailed study of what actually occurs in these conversations is a way to increase the understanding of which interactions that should remain personalised and which interactions that could be transferred to self-service. Such a detailed study is however complicated to perform resource-efficiently in a company. Even so CSR engage in conversations with customers on a daily basis and have a unique opportunity to receive all different kind of signals during these interactions. Through the direct interaction the CSR also have an opportunity to adapt to what the customers say and make clarifications to avoid misunderstandings. Over time knowledge about the customers is generated. This knowledge needs to be transferred to the organisation in order make improvements that lead to more satisfied customers that return for further purchases. The introduction of SST's also indicate that there is an understanding in companies that customers should have the opportunity to serve themselves through some system that the company supplies. The knowledge about what occurs in interactions between CSR and customers could also help these companies to find a balance between SST and inter-personal interaction and improve existing systems.

In this paper we suggest some requirements for a tool that can generate knowledge about interactions between CSR and the customers. The rational behind such tool is to have a resource-efficient way for deriving knowledge of contemporary interactions. The tool therefore needs to be quite simple to use in order to generate knowledge in a cost-effective way. It should reveal important characteristics of ongoing conversations between CSR and customers. Some companies use CRM-systems to keep track of previous encounters with customers and thereby identify what customers need and want. The purpose of this paper is instead to identify requirements to be put upon a computer-based tool for generating knowledge about interactions between CSR and customers that then can be used to develop new SST or improve existing systems. This paper builds upon insights generated by Salomonson and Lind (2006b) in which the potential role of an IT-system as an instrument for supporting the interaction between two parties in ongoing conversations was determined. In this paper we take this analysis a step forward by suggesting requirements to be put upon such a tool for capturing and disseminating knowledge about contemporary conversations. This research is driven from the question of *how to derive and categorise knowledge about interaction between CRS and customers by using a computer-based tool.*

Methodologically, conversation analysis (CA) complemented with action concepts for understanding the role of information systems, are used (c.f. also Salomonson & Lind, 2006b) for analysing the conversations. More specifically the notion of information systems actability (ISAT) is used for understanding which potential that a computerised information system could have in making interactions more efficient. ISAT uses socio-instrumental pragmatism (SIP) as the foundational ontology. SIP is to be interpreted as the chosen ontology for understanding socio-instrumental action performed between involved actors/agents. These concepts are important in order to understand IT-systems as action and communication systems supporting organisational action. The term SIP/ISAT is used in order to stress the ontological foundation for analysing conversations described by CA. Other scholars (c.f. Goldkuhl, 2003) also acknowledge the potential in combining analytical constructs from CA and pragmatic action theories, such as speech act theory. As empirical base, recorded conversations between customers and CSR in a multinational industrial company in the

building industry (BIAB), is used. The CSR are situated in a Swedish subsidiary and the customers have long-term contracts with BIAB and usually call to place sub-orders based on their contracts; request information; make changes or check status of on-going orders; and sometimes complain about something. We focus on conversations that according to Salomonson and Lind (2006a) can be classified as “typing” or “talking/typing”. These categories and a third one classified as “talking” are described in section 2.4. The conversations analysed are from a larger corpus of data (Salomonson, 2005) that were recorded during a three month period. The conversations chosen for this paper are representative for other calls in the larger of corpus where customers order products or get information for future orders and that can be classified as “typing” or “talking/typing”. In this paper essential action characteristics constituting conversations are focused. This means that we delimit ourselves from financial and ROI aspects of computerisation. This is rather identified as an issue for further studies.

At first in the paper, pragmatic action concepts for understanding IT-mediated business interaction and conversation analysis (CA) for understanding conversations are introduced. The notion of information systems actability (ISAT) forms together with conversation analysis the basis for the analysis of the conversations. In the same section we also discuss earlier studies on how IT-systems could support ongoing interactions. Then three typical telephone conversations between CSR and customers that has occurred at BIAB are put forward and analysed. This analysis is followed by deriving requirements of a computer-based tool for generating knowledge about interactions based on important characteristics from the conversations as well as theoretical constructs. The paper is concluded by summarising findings that can be a basis for making well founded decisions about which interactions between CSR and customers that could be transferred to a self-service system.

2 Pragmatic action concepts and conversation analysis for understanding business interaction

2.1 Social actions in business interaction

Several scholars within the information systems field put attention towards human action when conceptualising information systems (c.f. e.g. Goles & Hirschheim, 2000; Baskerville & Myers, 2004). Goldkuhl (2005, p. 1) claims that “[...] technical artefacts should be a prominent phenomena to study together with the humans surrounding them. There are things and subjects to study. What is also important is what the human subjects do with the artefacts; i.e. the actions of development and usage“. In an organisational setting it is thus important to understand the notion of organisational action as the basis for deriving a notion of IT-systems. Goldkuhl and Röstlinger (2003) have developed a notion of socio-instrumental action (SIP) for understanding actions performed by different types of agents, as for example human beings and IT-based artefacts.

A human being intervenes in the world, by performing actions, in order to create some differences. An important distinction is made between the result and the effects of the action (von Wright, 1971). The action result lies within the range of the actor and the action effects may arise as consequences outside the control of the actor. An action is performed in the present based on a history and aims for the future (Goldkuhl & Röstlinger, 2003). A social action is an action oriented towards other persons (Weber, 1978), and such action can be a communicative act, e.g. someone saying something to another person, or material (Goldkuhl, 2001; Goldkuhl & Röstlinger, 2003). Actor relationships between the intervening actor and the recipient are established through social actions (Habermas, 1984). Humans (often

supported by artefacts) perform action in the name of the organisation (Ahrne, 1994; Taylor, 1993). Actions are performed within the organisation – internal acts - and there are also external acts towards other organisations (e.g. customers or suppliers). Humans act in order to achieve ends (von Wright, 1971).

A generic model of social action including both communicative (Austin, 1962; Searle, 1969) and material acts is presented by Goldkuhl (2001) and Goldkuhl and Röstlinger (2003). E.g. an order from a customer to a supplier is a communicative act. The delivery of goods from the supplier to the customer is a material act. Since these are actions directed from one actor towards another actor they must both be considered as social actions. In this perspective we are mainly interested in communicative dimensions (as the illocutionary force with appurtenant propositional content according to Searle (1969)) of social actions in order to determine action patterns. This means that we delimit ourselves from instrumental and strategic actions according to Habermas (1984).

During a business transaction several business acts (c.f Lind & Goldkuhl, 2003) are issued from one party to the other. These business acts are grouped together in patterns of interaction. In the beginning of the eighties Winograd and Flores (1986) introduced the conversation-for-action schema (CFA-schema). Building upon that schema a number of scholars have propagated for different models for interpreting patterns of interaction during business transactions (c.f Dietz, 1999; Medina-Mora et al., 1992). The underlying meaning of these different transaction models is that communication implies action and that the performance of fulfilment acts (many times material acts) should be preceded by communicative acts. Such communicative acts are about setting the expectations, in terms of e.g. proposals and commitments, between the two parties.

2.2 IT-mediated actions

For the performance of most actions people need instruments of different kinds. The language is used as one instrument when performing business communicative acts. Such social and organisational issues are handled within linguistic (Dietz & Widdershoven, 1991; Goldkuhl & Lyytinen, 1982; Winograd & Flores, 1986) and semiotic perspectives (Stamper, 2000) for understanding information systems. Lyytinen (1981) claims that a substantial part of a practice is the business language, which includes vocabulary as well as rules for communicative action. For performing material acts there is often a need for an external instrument, which then extends the ability of an actor. Different media could be used to support the “transfer” of the communicative act between the parties involved in the communication. One such media is inter-organisational IT-system aimed to support (instances of) business interaction.

According to Goldkuhl and Röstlinger (2003) a computerised system is an action system. It is both an instrument for the performance of action and a support tool for humans to perform their actions. Information systems should be actable. IS actability (ISAT) is defined as “an information system’s ability to perform actions, and to permit, promote and facilitate the performance of actions by users both through the system and based on information from the system, in some business context” (ibid, p. 6). SIP (c.f. section 2.1) is the ontological foundation for ISAT. The theory of information systems actability has two essential ingredients. The first one is the distinction between three type of IS usage situations; *Interactive* usage situation (where users performs actions interactively together with and through the system), *Automatic* usage situations (where the system performs actions by itself based on predefined rules), and *Consequential* usage situations (where users performs actions

based on the information from the system). The second ingredient is the interpretation of an IS as consisting of (Goldkuhl & Röstlinger, 2003) an action potential (a predefined and regulated repertoire of actions), actions performed through and by the systems, an action memory (a memory of earlier performed actions including prerequisites for actions), and messages and document (where some documents are action media for user's interactive actions).

2.3 Conversation analysis

Since conversation analysis (CA) has been an important tool to analyse conversations in previous studies (Salomonson & Lind 2006ab) we feel that it is essential to describe the basic assumptions and concepts in this methodological approach. CA is an attempt to describe people's methods for producing orderly social interaction (Silverman, 2001). As Boden (1994, p. 15) describes it can contribute with a detailed insight about interaction: "[...] through a turn-by-turn analysis of organizational talk, it is possible to gain insight not only into how everyday business gets done at the level of talk, but also the interactional and organizational business that is accomplished through that talk". Hutchby and Woffitt (1998, p. 13) describes CA as a systematic analysis of talk produced in everyday situations of human interactions. CA is closely related to ethnomethodology. This is a naturalistic view with a purpose to understand how social order is created and shaped through conversation and interaction (Gubrium & Holstein, 1997). Garfinkel (1972) describes ethnomethodology as the study of the methods people use in their everyday life in order to shape and maintain social order. Reality is thus seen as something the members continuously have to recreate and uphold which is done through social interaction. When using CA researchers do not speculate about the conversationalists' intentions (Heritage, 1984). As Heritage (1984, p. 243) describe it: "[...] there is a strong bias against a priori speculation about the orientations and motives of speakers and in favour of detailed examination of conversationalists' actual actions.

In this paper the focus is directed towards an institutional and work related context where customers and CSR interact. Institutional interaction normally involves the participants in specific goal orientations which are tied to their institution relevant identity. According to Heritage (1997) institutional interaction also has constraints on what will be treated as allowable contributions to the business at hand and is associated with inferential frameworks and procedures that are particular to specific institutional contexts. Drew and Sorjonen (1997, p. 94) concludes that: "Analysing institutional dialogue involves investigating how their orientation to and engagement in their institutional roles and identities is manifest in the details of participants' language, and their use of language to pursue institutional goals".

Two important concepts in CA are turn taking and adjacency pairs. Turn-taking is how the conversationalists take turns in talking and each turn can be seen as the basic unit in the conversation. A turn can be very short as a yes or no or a longer statement as a full sentence. When combined these turns lead to a conversation. Each turn is also adapted to the situation and the specific context. Lepper (2000) describes that institutional relevance is sustained and worked upon on a turn-by-turn basis through the recognizability of the procedurally consequential actions of individual speakers who organize their turns within a framework of locally relevant rules of exchange. Drew and Sorjonen (1997) describes that an institutional turn taking system thus can be seen as a product of the participants' orientation towards their task related roles. An adjacency pair is two communicative actions, a first and a second, that together represent an exchange of words produced by two speakers, for example question-answer, offer-acceptance/rejection, invitation-acceptance/rejection and complaint-response (e.g. Schegloff & Sacks, 1973). After an utterance, for example a question, an answer is

expected. The second part of the adjacency pair does however not necessary have to follow the first part. Other communicative actions can come in between. For example a question can be followed by a clarification by the person who stated the question.

2.4 IT-systems as support for ongoing conversations

In Salomonson and Lind (2006a) three basic categories of conversations between customers and CSR has been distinguished. These are:

- *Typing*, that represents conversations that on basis of their content should be transferable to a SST, i.e. the customers could serve themselves without contacting the CSR. A typical typing situation is when there is a conversation where a customer wants to place an order, has the correct information needed (displayed in the conversation) to do that (e.g. product name, product number, and where to deliver) and the CSR does not act beyond that information the conversation.
- *Talking*, that represents conversations that are not preferably transferred to a SST due to the need of inter-personal interaction. An example of this is when a customer has a complaint and need an immediate solution or a reassurance that this can be solved in a near future. A typical talking situation is when there is a conversation where a customer has a complaint and there is an extensive use of questions-answers between them in order to find out what is wrong and how it can be solved the complexity in the conversation is higher.
- *Talking/Typing*, that represents situation where a combination of a SST and the possibility to talk to CSR is most suitable. Examples of this are conversations when customers have a lot of questions related to a possible purchase of a product. Questions indicate a lack of knowledge possible to acquire from a SST about the product or product related topics that the customer needs in order to make decisions. A well formed SST can give the answers customers seek. However some customers prefer to get answers by talking to a person.

This classification has been enabled by the overall composition in form of *topic* and the *conversationalist's activity* in the conversation. The phenomenon of topic is referred to as topicalisation according to speech-act approaches such as SAMPO (Auramäki et al., 1988). In speech act terms topic refers to the propositional content, i.e. what is talked about, and illocutionary forces to achieve ends concerning that topic.

Salomonson and Lind (2006ab) used these three basic categories of conversations in order to analyse the potential role of an IT-based artefact as an agent for interactive usage situations. From this work it became evident that the IT-systems, as embedded with predefined actions, do not have the same characteristics as human agents in the following senses:

- Importantly pre-defined actions need to follow each other dependent on which actions that are performed by the customer. This demands a need for either flexibility from the IT-system to let the customer specify the propositional content of the request in different order or to standardise the action pattern in which such request is specified.
- The identification and security issues become vital when using IT-systems for supporting the conversations
- An essential part of the business transaction is to ensure that valid expectations are set up. Since IT-systems consists of human-defined and pre-defined actions to cover many business situations there is a need to ensure that the actions are realistic and desired. Humans can make judgements of the occurrence of a certain situation. Computers cannot without being pre-programmed.

- In human-to-human conversations there are often a lot of clarifying discussions going on between the two parties. It might therefore be necessary to ensure that the IT-system continually asks questions regarding the customer's desires.

From this perspective an IT-system is to be regarded as an agent acting on behalf of the supplier, on behalf of the customer, on behalf of both parties or as a trusted-third-party acting to facilitate the communicative exchanges between suppliers and customers.

Based on the analysis of three conversations (two of which were characterised as typing and one that was characterised as talking/typing) some requirements to be put upon IT-systems for supporting conversations in business interaction were derived. These were (c.f. Salomonson & Lind, 2006b):

- Identification of the supplier and the customer
- Possibility for the customer to place an order
- Getting an answer of delivery conditions
- Flexibility regarding delivery place
- Possibility for the customer to update "personal data" in the IT-system
- Possibility for the customer (and the supplier) to register assessments of performed transactions

These requirements were restricted to the topic and content that the three conversations revealed, but do however give some indication about how to reason when transferring conversations to a SST.

3 An analysis of three conversations between CSR and customers in BEAB

In this section three conversations are analysed in order to find aspects that can be identified as important characteristics when structuring knowledge about conversations. Each conversation is described in detail and then analysed in accordance to CA and pragmatic concepts from SIP/ISAT.

3.1 Conversation 1

In this conversation a customer, Monica (M, wholesaler), calls Anna (A) at the customer service department at BIAB to order a product.

- 1 A BIAB, Anna
- 2 M Hello, Monica, A-Company.
- 3 A Hello Monica.
- 4 M I would like to order 3810646 ((Product number)), RK-products ((Product name))
- 5 A Hm : : ((Anna makes a note in her notebook))
- 6 M Four items to our central warehouse
- 7 A Hm : : ((Anna makes a note in her notebook))
- 8 M The customer number is 186-2795475
- 9 A Yes. ((Anna makes a note in her notebook))
- 10 M And then you send it to our central warehouse.
- 11 A Sure, we arrange that.
- 12 M Good. Thank you for that.
- 13 A Okay. Thank you. Bye.

It is a short conversation that lasts about a minute. Monica (customer) right away, in turn 4, announces that she wants to order products and Anna acknowledges this with a short “Hm” which is an indication that she has understood the previous turn in the conversation. Monica uses both product number and product name as an identification of the specific product. She thus shows a familiarity with this product in this context. In turn 8 Monica mentions a number that identifies her among other customers. She also makes two requests in turn 6 and turn 10. She wants the products to be delivered to their central warehouse and repeats it again at the end of the conversation. A repetition can indicate the importance and/or that there have been some problems with previous deliveries. The customer does not mention any delivery address which can indicate previous interaction between them or that the address already is in the ERP-system. In turn 11 Anna confirms the order and that the company (“we”) will arrange it. Monica expresses (turn 12) that she accepts that (“Good. Thank you for that.”). They have made an agreement and Anna has made a commitment about the delivery. She uses “we” which indicate that she has made the commitment on behalf of the company. The topic in the conversation is about ordering products. The customer is the active part in this conversation and provides the information needed. The CSR is more passive and acknowledge the requests and statements from the customer. There is no hesitation or additional questions from either Anna or Monica in the conversation. There is simplicity in the turn-taking and no repairs/explanations from either conversationalist. This conversation can be classified as “typing” in accordance to Salomonson and Lind (2006a).

3.2 Conversation 2

In the second conversation a customer, Karl (K, wholesaler), calls Ulrika (U) to order some products:

- 1 U BIAB, Ulrika
- 2 K Hello, Karl, B-Company in Spånga
- 3 U Hello hello.
- 4 K I'm thinking of ordering Tool B to Södra Länken ((Name of building project)). 300 pieces, 06632219 ((Product number)).
- 5 U Mm : :
- 6 K And then you send it to the usual address.
- 7 U Mm : : yes. Is it the usual address?
- 8 K Yes. Now there is surely a delivery cost when it's such a small sum?
- 9 U Yes it is.
- 10 K How much?
- 11 U Well- I have trouble estimating what that- It usually shows on the order ((in the ERP-system)) when I'm registering it.
- 12 K It is maybe easier to bring it to us and then we send it further- Are you passing us tomorrow?
- 13 U No, I don't think so.
- 14 K I think we bring it via us.
- 15 U You shall have it to you?
- 16 K Yes, we take it via us.
- 17 U Mm : : Okey.
- 18 K Then you will get an order soon.

- 19 U Yes you send it on the fax machine.
 20 K Yes.
 21 U Okey. Thank you.
 22 K Bye.
 23 U Bye.

After the identification process Karl announces (turn 4) that he is “thinking of ordering” a specific product, to a specific building project. The word “thinking” could indicate that the customer has not made a decision yet. A CSR then has a possibility to try to convince the customer to buy the specific product. However in the same turn Karl also mentions how many products he wants and specifies the product by the product number which indicate that he has made a decision. Ulrika acknowledges it with a short prolonged “Mm”. In turn 6 Karl makes a request that Ulrika arrange that the products are sent to the “usual” address. It thus seems like they have talked to each other before. In turn 7 Ulrika anyway wants a confirmation about the address which can be seen as a way to make sure that the products are delivered to the right destination. In turn 8 the customer wants to know the delivery cost. Ulrika announces in turn 11 that she can’t give an answer before she has registered the order. The customer does not ask more about the delivery cost. Instead he reasons that it is easier to deliver the products straight to “us”, i.e. the customers company, and also asks if BEAB (“you”) is “passing us tomorrow”. After a negative answer from Ulrika follows a sequence of request-question-answer (turn 14-17) where the customer finally decides to have the products delivered to him. In turn 18 the customer announces that he will place an order soon and Ulrika’s response is if the order will be sent on the fax machine. What at first seemed to be an order by the telephone then turned out to be a future order with a different medium. The topic in this conversation is about getting information to be able to order products in the future. The CSR is more active in this conversation compared to the previous conversation. The customer can although be regarded as the more active part since he carries the conversation further with his questions and requests. The adjacency pairs request-response and question-answer are used in the conversation. The information the customer seeks concerns delivery (cost and place). Although this conversation is a bit more complex in the turn-taking and use of adjacency pairs than the previous one it can still be classified as “typing” in accordance to Salomonson and Lind (2006a).

3.3 Conversation 3

In the third conversation the customer, Sjögren (S, a wholesaler), wants to order products from Carl Sundin (C, Sundin is his last name):

- 1 C Sundin.
 2 S Hello Sjögren, O-company in Ö-town.
 3 C Hello.
 4 S I have a customer that asks for the price on an U-product, dimension 560.
 5 C Yes. You mean an UR-product?
 6 S Yes is that the name?
 7 C You mean UR 2?
 8 S Yes UR 2 dimension 560.
 9 C Hm : : (3.0) ((Carl checks a list with prices on his table))
 10 S It is 6 meter.

- 11 C 6 meter P-products ((overall name of the product category)) yes. Yes and for that you pay 3467.27 for a P-product.
- 12 S 3467. It is net price?
- 13 C Yes.
- 14 S BR-product- ((overall name on the product category)) There are no 20 degrees?
- 15 C No not above 315 no. That is correct.
- 16 S Do you have it in 45 and 30 degrees?
- 17 C Sure thing.
- 18 S Can I get a price on that?
- 19 C (2.0) ((Carl searches the ERP-system)). 30 degrees costs 3612 kronor och 14 öre.
- 20 S Hm : :
- 21 C And 45 degrees costs- (2.0) ((Carl searches the ERP-system)) 3901 and 19.
- 22 S You have that in stock?
- 23 C Yes.
- 24 S Is there a particular day in the week you deliver products to Ö-town?
- 25 C What is it Thursdays or is it- Yes it is either Wednesdays or Thursdays.
- 26 S You have a least one shipment every 14 days?
- 27 C Yes we have.
- 28 S Yes then I thank you for that.
- 29 C Yes you are welcome. Bye.

This is a conversation where Sjögren, the customer, initially in turn 4 wants information about the price of a specific product on behalf of his customer, i.e. the customer's customer. The product name that Sjögren uses is however potentially wrong since Carl in the next turn asks if he means "an UR-product". Carl obviously needs further specification from the customer since he in the next turn asks him again about the product name – this time with additional information: "You mean UR 2?" The customer answers with a confirmation that indicates that they are now talking about the same product. In the same turn he also gives additional information about the dimension of the product. Carl can based on this information now start searching for an answer about the price. In turn 9 there is silence for three second after Carl's short confirmation. This seems to trigger the customer to provide additional product information about length. Carl repeats the length and also gives an answer about the price. Then follows a long sequence, turn 12-27, with questions-answers where the customer needs information about price (net), product (degrees), product (degrees again), price, in stock, days of delivery, and frequency of delivery. The topics in the conversation are about price, different product features and terms of delivery. Carl's main role in this conversation is to act as an information source. He is more active in the beginning when there is need for some clarification about what kind of product the customer wants. There is no more obvious need for clarifications in the conversation. Carl does not ask any more questions. Instead the customer is then the active part that carries the conversation further with his questions. There is no referral to previous interaction between them. The turns in the beginning are important to avoid misunderstandings and the conversation can thereby be classified as something between talking and typing – thus as "talking/typing" in accordance to Salomonson and Lind (2006a).

4 Result: Essential characteristics in conversations for deriving and disseminating knowledge

From the conversations analysed above it can be noted that there are both similarities and differences. By using earlier results reported upon by Salomonson and Lind (2006ab), action-theoretic concepts in SIP/ISAT and CA different characteristics of the conversations could be summarised in the table below.

<i>Conversation Aspect</i>	<i>Conversation 1</i>	<i>Conversation 2</i>	<i>Conversation 3</i>
Phase in the business transaction	Realizing an expectation between customer and company Commitment	Setting an expectation between customer and company Proposal	Setting an expectation between customer and company Proposal
Topic	Ordering products	Getting information about terms of delivery for a future customer order	Getting information about price, product features and terms of delivery for a future customer order
Essential business acts	The customer places an order. The order is confirmed by the CSR. The CSR makes a commitment	The CSR is setting expectations about what there is to be expected in a future order by answering questions from the customer	The customer is retrieving information about what there is to be expected from BIAB on behalf of another customer
Essential information provided from and to the customer	By customer: <ul style="list-style-type: none"> product number product name number of products place of delivery customer's customer number By CSR: <ul style="list-style-type: none"> no special 	By customer: <ul style="list-style-type: none"> product name building project number of products product number address By CSR: <ul style="list-style-type: none"> no special 	By customer: <ul style="list-style-type: none"> product characteristics (dimension and length) By CSR: <ul style="list-style-type: none"> product name product characteristics (degrees) price product availability delivery dates
Active part	Customer	Customer	Both (BIAB as an active information source and the customer (later in the conversation) as an active information seeker)
Errand solved through conversation	Yes	Yes	Yes
Depend on earlier interaction	No	No	No
Products referred to	RK	Tool B	UR 2

This table with its different conversation aspects is however complicated to transfer to a tool that CSR can use after each conversation. We have therefore simplified the table further and generated some questions that are based on these aspects. As Salomonson and Lind (2006ab) stated aspects of activity, complexity and topic in conversations are important in order to derive conclusion about which conversations that could be transferred to a SST and which should be handled through inter-personal contacts. Some examples of questions that could appear after each conversation between CSR and customers are:

- Who provided most information? If the customer provides most information, i.e. has the information needed to for example order a product the customer is more likely to be able to serve himself via a SST. The person that provided most information is likely to have been the most active part in the conversation.
- Who asked most questions? If the customer asked most questions it indicates a lack of information that the customer has not been able to receive on his own. This indicates more need for inter-personal interaction or a development of existing SST.
- What was the conversation about? If the topic of conversation was about solving a complaint it is likely to be more complicated and thus need more inter-personal interaction than a conversation about ordering products.
- Were there commitments made to the customer? Since commitments are essential in the business interaction we believe that one always should consider whether such important acts should be delegated to the IT-system by its predefined acts.
- Was the conversation based/dependent on previous conversations? If the conversation was based/dependent on previous conversations it is likely to be more complicated and thus more difficult to transfer to a SST.
- Was the customer's errand solved through the conversation? If it was solved it indicates that the conversation was not so complicated that further future interaction was needed.

Based on the analysis proposed in this paper it seems relevant to state that these individual characteristics of conversations should be registered in an IT-supported tool by CSR. In this way it would be possible to capture knowledge about individual conversations. Based on these individual characteristics we then find it possible to derive different types of conversations and variations within these types. These characteristics should be regarded as *intra*-transactional. It should however be noted that there will not be enough arguments by just deriving single transactions characteristics. It is thus needed to also look into the occurrence of the same type of conversations. There is a need for payoff when there are investments made in IT. Examples of such *inter*-transactional characteristics are:

- How often does this type of conversation occur?
- What is the variation in relation to other types of conversations?
- What categories of customers call the CSR?

Taking these characteristics we can then use concepts from ISAT to reason about more characteristics needed to identify in order to arrive at a comprehensive picture for the potential in transferring this type of conversation to an SST. Such questions are:

- Are the essential communicative acts possible to standardise? What degree of variety between different transactions is there? Is it possible, on before hand, to determine such a variable action repertoire?
- Which information from the conversations would be valuable to store in the action memory?
- Which communicative acts would not be needed in a SST context?

How would then a computer-supported tool for grasping this knowledge work? We believe that it first of all should be possible to generate general intra-transactional knowledge about the conversation. A CSR needs to be able to transfer her/his knowledge from single conversations to the tool in a simple and time-efficient way. This knowledge forms the basis for identifying general inter-transactional knowledge about conversations. The tool should then guide the user that makes strategic decisions (about what conversations that are possible to transfer to a SST) of which possible types of conversations that there is a need for developing more knowledge about. This means that there will be a need in coming conversations for the CSR to reflect about and answer more fine-grained questions about the characteristics about such conversations.

To transfer a typing situation and possibly also (parts of) a talking/typing situation to a SST should also be regarded from an efficiency point of view. As a basis for making a decision about such transferring aspects of ROI (return of investment) are needed to take into consideration. This means that detailed answers needs to be added to the knowledge base before making such decisions. One example of such a question is the length (in time) of each conversation. Another issue is to identify possible different conversation techniques that CSR use when talking to customers. For example what different techniques are used to deal with a dissatisfied and possibly angry customer?

This approach builds on that the customer's interaction/reaction to the company identified by the CSR could be grasped at the point of interaction. This is valuable knowledge that could be used for other purposes than to identify types of conversations possible to transfer to a SST. This also means that the requirements of a tool proposed here not only should be seen as a support for looking into typing and typing/talking situations. It will thus also be valuable for identifying knowledge about talking situations. A future tool should also be adaptable to the context at hand, i.e. easily adjusted to the specific company that uses it.

5 Conclusions

In this paper we have based on three service encounters derived some characteristics of actually performed conversations. We have looked into conversations that have been characterized as typing and typing/talking. In our strive towards deriving requirements of a computer-supported tool for continuously capturing knowledge about the service encounter we differ between intra-transactional and inter-transactional characteristics. The basic idea is that there is a need to understand intra-transactional characteristics and then gather data about the occurrence of such type of transactions.

A tool for determining key characteristics should not be too complex. It seems that it should be relevant first generate coarse-grained knowledge about which types of conversations that could be possible to transfer. When such types of conversations are identified it would be valuable if the system could ask the CSR more detailed questions about characteristics in the conversations. Getting such a tool working in a good way would create a great base of knowledge for making well-founded decisions about continuously improving norms and rules for business interaction. This knowledge would be even better by combining the knowledge captured in the tool with analysis of what happens in SST-interaction.

Our line of reasoning is founded in real conversations and theoretical constructs focusing on conversation, action and information systems as action system. The next step is to develop this tool and put it into a test environment. In this paper we have on conceptual basis formulated a number of different requirements of a tool, i.e. questions that the tool should

help stating and recording answers of. In line with Lyytinen (1991) an important step in the actual implementation of such a tool is to identify challenges to make accurate adaptations to the context in terms of vocabulary to be used etc. Another issue are the financial and ROI aspects of computerisation that needs to be considered.

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