Understanding and Enhancing
Call Centre Computer- Human-Human Interaction

Anette Steel
University of Waikato
Hamilton, New Zealand
+64 7 838 4466 ext 4796
anettes@cs.waikato.ac.nz

ABSTRACT

There are many interactions that take place at a call centre; between the customer and agent, the agent and computer, and indirectly between the customer and computer. This paper proposes areas of research, eg auditory feedback and human-human communication, which could provide insight and possible improvement to the interaction. The paper also describes studies that have been carried out, as well as studies that are being planned.

Keywords

CHHI, Human-human communication, CSCW, telecommunication, auditory feedback

INTRODUCTION

The main aim of the research proposed is to investigate the interaction that takes place in a call centre, between the customer, agent and computer (Computer-Human-Human Interaction, CHHI). The interaction that takes place has extra complications above traditional CHI. For example, the customer, who is interested in the product or service, is not directly interacting with computer. The agent on the other hand is interacting with both the customer and the computer (Figure 1).
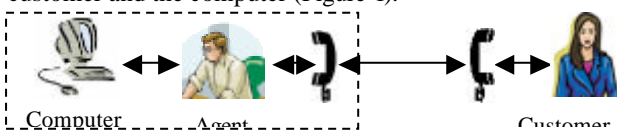

Figure 1. CHHI: computer operated by agent communicating with customer.

This area seems to be open and unexplored with potential for interesting research. Despite this potential we have

only been able to find one article directly related [1].

To gain a better understanding of this interaction, we decided to start by looking at communication between the two humans. From studies, observations and literature research we propose a framework for human-human communication in CHHI, see Figure 2. This describes the collaboration on a continuum, where the communication quality degrades as the communication mode gets more impoverished. The highest quality communication occur when both people are able to see each other and the computer, and the worst is where the collaborators can only communicate over a poor audio channel and only one is able to see the computer.
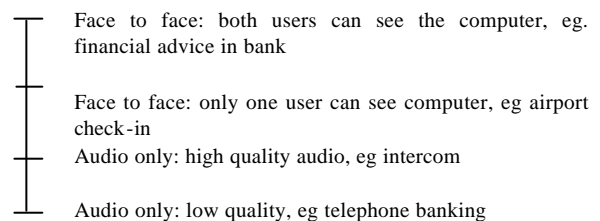
Face to face: both users can see the computer, eg. financial advice in bank

Face to face: only one user can see computer, eg airport check-in
Audio only: high quality audio, eg intercom

Audio only: low quality, eg telephone banking

Figure 2 The human-human communication continuum in CHHI.

HUMAN-HUMAN COMMUNICATION

There is evidence that mode of communication, ie face to face or audio only, does not have an effect on outcome of collaborative problem solving as long as people are able to communicate verbally [3]. Despite this there is still evidence that there is a difference in between face to face and audio only communication. For example, Short *et al* [5] argue that there is evidence that the process of arriving at the outcome is affected by the mode. Rutter, Stephenson and Dewey [4] argue that audio only interactions are more task-oriented, depersonalized, less spontaneous. Further, it has also been argued [2] that the quality of the audio channel effects how well people collaborate.

This previous research led us to the proposition that there is a difference in Human–Human communication depending on the mode. The poorer modes lead to more impoverished collaboration.

OBSERVATION AT CALL CENTRES

To gain some initial insight into CHHI and human communication in CHHI, we carried out observations at call centres. The intention was to get initial general understanding of the interactions, as well as an appreciation on how CHHI relates to traditional CHI.

Three call centres were visited. They were located in New Zealand with English as the primary language. The sessions at each call centre lasted between three to five hours. During the sessions the observer would listen in on telephone conversation. Interviews and discussions were made in between calls, and before and after each session.

For all of the call centres there were two main overall issues; reducing length of calls, and increasing customer satisfaction. However, there were also a number of well-known CHI issues identified during the observations, such as learnability, ease of navigation and feedback. However, there are additional complications with these issues. For example feedback needs to be communicated to both the agent *and* customer. Further, telephones provide a low quality audio medium for providing feedback.

A second visit to one call centres was made to investigate the issue of feedback further. We wanted to find situations were the agent would communicate feedback to the customer. We also wanted to find what activity that the agent was involved in when the feedback was communicated. The results from the observations led to a study into auditory feedback at call centres [6].

INVESTIGATING CHHI WITH AUDITORY FEEDBACK

To enhance CHHI, we tried to improve the low quality telephone audio by including auditory feedback directly to the customer [7]. The hypotheses were that the addition auditory feedback would lead to a reduction in time, improved subjective satisfaction, and conversation flow.

The experiment used a simulated call centre interaction, where the participants had to perform two tasks over the phone with a hired agent using prototype software. It was a between subject study, that is, half the participants had auditory feedback added to the interaction.

We collected both quantitative and qualitative data. It was found that the addition of auditory feedback showed some promising indication. There was some reduction in time, as well as some improvement in the progress and flow of the conversation.

In the initial experiment there were a number of factors, such as quality of the auditory feedback and verbal communication by the agent, which could have affected the result. Another experiment was carried out to control those factors as well as investigate auditory feedback in CHHI further. The findings from the second study were that there was only a small insignificant difference in time,

progress and flow, and subjective satisfaction between the conditions.

FUTURE WORK

We are now extending our studies to investigate if the low audio quality over the phone effects the interaction and to gain a better general understanding of the interaction. Further, there is a difference between the earlier studies and call centre CHHI as there is a computer involved in the interaction, and only one of the two collaborators has access to it. We are also interested to investigate where on the continuum(Figure 2) call centre interaction is.

Our intention is to compare face to face where only agent can see the computer, with audio only poor quality (over the telephone). The hypotheses are that there will be a difference in time, subjective satisfaction and, in style and content between the face to face and the telephone conditions.

CONCLUSION

As the area of call centre CHHI seems to be an unexplored area, our main aim is to gain a better understanding of the interaction and through that make enhancements. We have attempted this through addition of auditory feedback to the interaction. We are planning to carry out a study into human-human communication. Through this improved understanding we are hoping to find ways of enhancing the interaction.

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