# Artificial Intelligence and Customer Service Satisfaction Design Instrument

Jaime Reborn

University of North Texas

***Abstract:*** Customer service satisfaction is paramount to the overall success of most businesses and organizations and technology is being used, more and more, to help organizations achieve high levels of customer satisfaction with their organizational end-users, (Ramey, 2012). Many organizations attempt to solicit feedback from their employees, members, or end-users, etc., in a myriad of ways such as interviews, questionnaires, and surveys, etc. The research done in this document focuses on creating a design instrument specifically to measure the customer service satisfaction of organizational end-users with the artificially intelligent interface systems used in those organizations. This document explains the parameters and contexts from which the design document was comprised for evaluating artificially intelligent customer service technology (AICST, pronounced "assist").

*IndexTerms* - **Component,formatting,style,styling,insert.**

## I. INTRODUCTION

The use of an Artificial Intelligence (AI) technology such as IBM Watson in an extra-terrestrial learning environment could be fundamental to the success of a manned mission to Mars. The implementation of AI allows explorers aboard the manned mission to Mars to have access to vital information for research and real-time interaction with the AI. Since the explorers aboard the manned mission to Mars would have limited access to people on the Earth, their survival would depend on being able to operate in isolation from other human beings. Refinement and improvement of such technologies, particularly AI technology, can improve the chances of success of the extra-terrestrial explorers and by doing so make it easier for the explorers to research information that will be useful in helping mankind.

Most organizations, especially for-profit organization, heavily rely on repeat business customers and the overall customer service satisfaction of their end-users. It is very beneficial for organizations to maintain a very high level of customer service satisfaction. One very important aspect of an organization maintaining a high level of customer service satisfaction is for the organization to have a great deal of flexibility with regard to being available for its end-users to be able interact with the organization. While there are some organizations that operate on a 24-hour basis of availability to their end-users, the majority of organizations do not. Further, most of those organizations that do have 24-hour availability do not necessarily have live human representatives of the organization to available to interact with their organizational end-users. In those situations, many of the organizations will use a form of artificially intelligent customer service technology (AICST) which acts as a virtual presence for the organizational end-users to interact with, (Morris, 2015). Many organizations will use interactive websites, automated telephone attendants, and electronic self-checkouts systems, etc., as virtual presence for the organization for organizational end-users to interact with, (Rossi, 2014).

Although many organizations use an AICST to interact with their organizational end-users as a virtual presence, some of these organizations still do not achieve reach their goals of maintaining a high level of customer service satisfaction for a myriad of reasons, (Burg, 2013). The AICST being used may not be very user-friendly. The organization's end-users may prefer to speak to a live human representative of the company, (Morris, 2015). The organizational content is suited for the assigned to allow end-users to interact with it, (Johnson, 2014).

Another important aspect of an organization developing and preserving a high-level of customer service satisfaction soliciting feedback from its organizational end-users to determine how its organizational end-users feel about interacting with the AICST being used by the organization. Wherever possible, organizational management should solicit input from customers (end-users or future end-users) to create or improve an organizational AICST, (Rossi, 2014). There are times when organizational managers will implement an AICST solution for their organization's virtual presence with no initial input or accompanying feedback on what the needs are of the organization's end-users, (Morris, 2015). This document discusses the parameters of evaluating input from organizational end-users to determine their comfort level with the AICST virtual presence of their employment or academic environments.

## II. METHODOLOGY

### Participants

The participants in the study were comprised of 40 people who either taught at an academic institution or were students at an academic institution. Initially, only 15 participants were chosen for the study to provide information on how they felt about using the AICST of their academic organization. All 15 of the initial participants were all instructors at an academic institution. However, the course instructor, Dr. Knezek, informed us that we would likely need at least 40 people to reach sufficient saturation for the study. Based on the recommendation from the instructor, the participant pool was opened up to include how instructors and students felt about using the AICST of their academic institution.

### Materials

A questionnaire was developed and emailed to potential participants in the study. Social media was also used to solicit support for the construction of the design instrument. Some participants were cohorts and other fellow University of North Texas students.

*Procedure*

The questionnaire was emailed to the potential participants with the participants emailing the questionnaire back to the researcher. The results of the study were analyzed with the data management software application, Statistical Package for the Social Sciences (SPSS). Coding was done to conceal the identities of the participants and to avoid any biases in calculating the results.

*Instrumentation*

The questionnaire for this study was considered valid for the evaluating the development of a design instrument. The questions in the questionnaire were designed to determine the end-user customer satisfaction level of interacting with the AICST of their academic institution. One of the primary aims of the questionnaire was to determine how viable an organizational AICST can be in facilitating interaction with an organizational end-user without the involvement of a live human representative of the AICST. There were 10 questions on the questionnaire.

## III. RESULTS

The instrument, as expected, measured the satisfaction/comfort level of how end-users felt about using the AICST at their academic organization. The findings showed that while most of the participants felt fairly comfortable using the AICST at their academic institution, many of the participants felt that they would rather speak to a live human representative of their organization if given the chance. While the instrument proved acceptable, overall, for measuring end-user customer satisfaction, there were some challenges to the research that may kept the instrument from being shown as a more viable tool for its intended purpose.

The Chronbach's Alpha, which measures the reliability of an instrument, was at .604, which is just above what is considered to be a satisfactory level (.600). The researcher believes that it may be possible that teachers who facilitate education may have a different level of customer service satisfaction with their academic institutions AICST than the level of customer service satisfaction for students at their academic institutions. This belief comes from the perspective that the customer service satisfaction level with AICST for instructors at their academic institutions would be higher for instructors because instructors have more say in what AICST is used by an academic organization. Thus, if only instructors had been used for the study, it is likely that the Chronbach's Alpha score of .604 may have been significantly higher. However, data was kept to determine which participants were instructors and which participants were students.

The data showed that no potential elimination of any of the 10 questions in the questionnaire would have improved the Chronbach's Alpha score. However, the two questions that seemed to be most consistent between the participants were Question #05 and Question #10. An overwhelming majority of the participants agreed that the AICST at their academic institution allowed them start-to-finish transactions with their respective academic institutions without the need for a live human representative. Additionally, a strong majority of participants felt that the AICST of their academic institution was a reliable substitute for live human for interaction with the organization as compared to communication between themselves and a live human representative of the organization.

## IV. DISCUSSION

While the instrument did measure what it was intended to measure and the Chronbach's Alpha reliability statistics met the minimum standards, the instrument could be improved to make it a more formidable tool for evaluating end-user satisfaction of instructors with the AICST of their academic institutions. A longer time period for the recruiting of suitable candidates would likely increase the accuracy and viability of the instrument. When it was determined that the participants needed to number at 40 rather than 15, it took a furious rally to reach the requisite number of participants for the research.

If there are to be instructors and students used for a future evaluation of this instrument, the distinction between instructor and student (and possibly administrator) should certainly be noted within the research. A comparison of how instructors feel about the AICST of their academic institution versus that of how students feel about the AICST of their academic institution could be very important to the academic community. This would be especially true between instructors and students from the same academic institution.

Overall, end-user confidence seemed high with AICST. SPSS analysis showed that some of the questions may need to be reconsidered to make the instrument stronger as, mentioned earlier, elimination of any of the 10 questions did not significantly improve Chronbach's Alpha. The One Way Anova results were .006, which is less than .05, thus the use of the instrument provides a significant difference. The instrument measured the satisfaction and comfort level of how end-users felt about the AICST of their academic organizations.

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APPENDIX A

Jaime Reborn's
**AICST Interview Questions**

Please complete this interview about the Artificially Intelligent Customer Service Technology (AICST), pronounced "assist", at your university or place of work to indicate the extent to which you agree or disagree with the following statements:

> SD = Strongly Disagree
> D = Disagree
> N = Neutral
> A = Agree
> SA = Strongly Agree

| Gender: (Circle One) | Male/Female | | | | |
|---|---|---|---|---|---|

| Age Group: (Chose One) | | | | | |
|---|---|---|---|---|---|
| 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70+ |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | The AICST is easy for me to operate and retrieve necessary information. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 2 | The AICST allows me to reach the corporate staff member of my choice. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 3 | The AICST gives me the option of speaking to a live customer service representative whenever I choose to. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 4 | The AICST provides me with sufficient services and contact information for afterhours support. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 5 | The AICST allows me start-to-finish transactions with an organization without the need for a live human representative. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 6 | The AICST allows me to leave messages with an organizational staff member of my choice if they are not available at the time that I attempt to reach them via AICST. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 7 | The AICST does not improperly route me to a wrong extension when using their phone system. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 8 | The AICST makes me feel as if the organizational management of the organization I'm interacting with is trying to AICST me with my needs. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 9 | The AICST is impersonal. | ○ SD | ○ D | ○ N | ○ A | ○ SA |
| 10 | The AICST is a reliable substitute for a live human representative for routine interactions between myself and the organization that I am interacting with. | ○ SD | ○ D | ○ N | ○ A | ○ SA |