WHITE PAPER
Doing Analytics on Call Center Data

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Ask any executive if they know what is going on in their call center and they assure you that they are in control and know what is going on. (Executives are always in control and always know what is going on, or so they say.) Then ask the executive what is actually taking place in the call center and the executive will say – "We get 10,000 calls each day and the calls last for 4 ½ minutes."

Press the executive a little more and here's what happens – "What are you customers actually saying? What questions do they have? What complaints do they have? Do they want to buy something else? Are they happy with service?"

And here is where the executive draws the line – "Well you can't know what the customer is actually saying. You just can't go into the detail of each call."

What the Customer is Saying

But isn't what the customer is saying in the call center really important? Isn't hearing the voice of the customer an extremely valuable thing to do? Here are some of the things customers typically talk about in the call center -

- How to do an installation
- What products have not worked properly
- What service failures/delays there have been
- What improvements the customer is suggesting
- What other products the customer wants to buy
- And more

In a word the voice of the customer is one of the most important things that management of a company can hear. And yet very few if any companies pay any real attention to what the customer is saying.

Today's World (that was yesterday)

In today's world there have been advances made in technology that indeed do allow companies to hear what the customer is saying in the call center.

The challenges are many. There are always a lot of messages. The messages are in the spoken word. The voice to text transcription is less than perfect. Putting text into a data base is an act of modern sorcery. And creating meaningful visualizations is an art form. But the challenges are being met and there are really exciting results that are being garnered today.

Despite all of these obstacles it is possible to hear the voice of the customer through the call center. Ten years ago it was not possible. Today it is.

The Challenges

Challenge number 1 – voice to text transcription. The first challenge awaiting the organization that wishes to hear the voice of the customer through the call center is the challenge of voice to text transcription. Even under the best of circumstances, the voice to text transcription will contain errors. In the most extreme case manual transcription can be done. With manual transcription it is possible to achieve 99% accuracy. However manual transcription is very expensive and very time consuming. The best bet is to do automated transcription. Automated transcription is much less expensive but is more error prone. It is possible to achieve up to 90% accuracy with automated transcription. However even in the best of circumstances there will be inaccuracies. Inaccuracies in transcription arise because of regional accents, poor line quality, low voice modularity and so forth. It is worth noting however that even when people listen to each other face to face there is no such thing as 100% accuracy of comprehension. In human conversation, the brain automatically tries to fill in what word was expected or what word makes sense if a word is not heard correctly. So expecting 100% accuracy in voice transcription is an unreasonable expectation.

In any case it is possible to go from the spoken word to an electronic textual representation.

Challenge number 2 – people talk differently than they write. What may be a normal, comprehensible conversation between two people would never pass muster if the very same words were written and graded by an English teacher. Speaking is something we do so naturally and instinctively that we don't even know that we speak differently than we write. The

challenge with a call center is that not only must the call center deal with language, the transformation of a call center conversation has also got to deal with conversation.

Challenge number 3 – going from electronic text to a data base representation. After the voice to text transcription is done, the next step is to read the electronic text and make sense of it, and place the text meaningfully into a data base. The hard part of text to data base transformation is the understanding of context. Text is not meaningful unless the context of text is understood. The problem with context is that the vast majority of context lies outside of text. In order to be effective the external influence of context must be interjected into the text.

The good news is that there is technology that does that text to data base transformation today. The process of automatically reading text and turning text into a data base is called "textual disambiguation". After the voice is transformed into electronic text, textual disambiguation is used to transform the text into a data base, where both text and context are equal partners in the data base.

Some of the important elements of the data base that is created are –

- An awareness of politeness (or impoliteness)
- An awareness of red flag terms
- An awareness of important business terms
- And so forth

Challenge number 4 – reading a data base and converting the data base to a visualization. There is dashboard technology today that is quite useful in converting the data bases written from a call center into a meaningful visualization.

There are many ways that call center data can be examined an visualized –

- By date and time
- By geography
- By general nature of the conversation
- By subject matter
- And so forth

Each of these divisions of customer conversation data yield valuable insights.

Is this for real? An example.

As an example of what can be done with the conversations in a call center, an example was created (by Boulder Insight). (NOTE: you can see actual examples of the dashboard by contacting Forest Rim at whinmon@msn.com. Just ask to see the call center dashboard.)

The dashboard that is created is for a telephone company that handles over 75,000 call center activities each day. There were far too many calls each day for a human to make any sense of the calls. So the calls were examined by textual ETL and loaded into a data base. Then the data base was visualized.

On the top left of the dashboard is a general synopsis of what call types are being conducted. On the bottom right is an hour by hour analysis of how many and what kind of calls entered the system. Above the hourly analysis is a weekly analysis. And above the weekly analysis is a monthly analysis. And in the center of the dashboard is an analysis of what subjects were on the mind of the caller.

The dashboard that was created allows drill down on each of the topic can be analyzed. For example, you can ask – At 9:00 am how many calls were there and of those calls how many were complaints? And when people were complaining at 9:00 am what were they complaining about?

Or you can go to the subjects analysis and ask what were people conversing about to the call center? And when they were conversing what were they saying?

The dashboard analysis is for a large telephone company that gets over 75,000 call center calls a day. One glance at the dashboard tells management what is going on in the call center. If management finds something of interest management can drill down to the lowest level of detail.

In Summary

Listening to the voice of your customer is one of the most important things a company can do. Listening to the customer through the call center is extremely valuable.

There are challenges throughout the process –

- Voice to text transcription accuracy
- Textual disambiguation in turning text into a data base
- Capturing the context of text
- Visualizing the end results

Forest Rim Technology was formed by Bill Inmon in order to provide technology to bridge the gap between structured and unstructured data. Forest Rim Technology is located in Castle Rock, Colorado.

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AUTHOR AND TECHNOLOGY PIONEER

Best known as the "Father of Data Warehousing", Bill Inmon has become the most prolific and well-known author worldwide in the big data analysis, data warehousing and business intelligence arena. In addition to authoring more than 50 books and 650 articles, Bill has been a monthly columnist with the Business Intelligence Network, EIM Institute and Data Management Review. In 2007, Bill was named by Computerworld as one of the "Ten IT People Who Mattered in the Last 40 Years" of the computer profession.
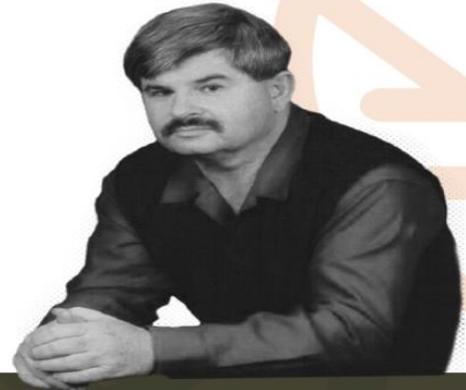
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