



56 Tiffany Drive
Windsor, CT, 06095
tel: 860.490.3488
fax: 888.831.3304
info@3xcorp.com
www.3xcorp.com

**Text Analysis / Survey Analysis
(Information Technology (IT) Application)**

Contents

Introduction	2
How Text Analysis Works	2
IT Organization Survey Data	3
Text Analysis Results	3
Improving Customer Satisfaction	4
Conclusions / Summary	5

Introduction

A large corporate IT support organization frequently uses survey data to assess the level of customer satisfaction from its end users. The most valuable feedback comes from the open-ended text comments that users fill out at the end of their survey.

However, the challenge has always been how to translate these valuable comments into positive action in a reasonable amount of time as reading thousands of user comments can be very time consuming.

The solution to this problem is Text Analysis !

How does Text Analysis Work ?

Text analysis is a software program that analyzes groups of words to determine the *contextual relevance* of words and extract the *meaning* or *sentiment* behind the words into useful concepts.

The software uses embedded dictionaries that have been trained to recognize key concepts in various applications : customer satisfaction, security intelligence, information technology, and many more! These key concepts offer insights into what users are saying in their text responses, concepts like : 'positive' or 'negative', 'budget', 'timeliness', 'communication', or 'accuracy'.



These concepts may then be grouped according to their meaning, and summarized into specific categories that are used to classify certain types of responses. This is very useful to organizations as they can take these responses and distribute them to the groups responsible for certain functional areas (i.e. billing, customer support, customer service, etc.). These responses may also form the basis of an action plan to make organizational improvements (e.g. improve customer satisfaction).

IT Organization Survey Data

The IT organization in question received over 6000 customer surveys during the prior month. It was decided to run a text analysis of the survey comments in order to determine what were the dominant themes and categorize the user comments for improving overall customer satisfaction.

Text Analysis Results

It was determined that the recorded survey comments could be divided into eight (8) distinct categories with each category being described by a distinct number of key concepts :

Category	Concepts
Hardware Comments	33
Positive Comments	29
Negative Comments	24
Software Comments	21
Customer Support Answers	21
Phone Issues	13
password resets	11
General Tech Support Comments	9

Descriptors	Type
fx service & excellent	Rule
professionally handled	<PositiveCompetence>
fx professional & courteous	Rule
fx productivity & high-quality	Rule
problem resolved	<PositiveCompetence>
fx excellent & job	Rule
accurately handled	<Positive>
fx accurate & installation instructions	Rule
able to use	<Positive>
able to speak	<Positive>
able to run	<Positive>
able to meet	<Positive>
able to get	<Positive>
able to find	<Positive>
able to determine	<Positive>
able to deliver	<Positive>
able to connection	<Positive>
able to connect	<Positive>
able to assist	<Positive>
able to ask	<Positive>
able	<Positive>
fx 2 months & productivity & high-quality	Rule
fx 2 months & high-quality	Rule
fx (thanks thankful) & fast	Rule
fx (thanks thankful) & excellent	Rule
fx (resolved resolving) & ticket	Rule
fx (resolved resolving) & quickly	Rule
fx (resolved resolving) & problem	Rule
fx (resolved resolving) & incident	Rule

Descriptors	Type
fx signal & total	Rule
fx signal & normal	Rule
repeated phone	<Products>
phone ring	<Products>
phone to retrieve	<Products>
phone issues	<Products>
phone database	<Products>
phone connection	<Usability>
phone connection	<Products>
phone	<Products>
new phone	<Products>
coverage connection problem	<Usability>
fx connection & signal	Rule

Comment Categories (with examples for 'Positive' and 'Phone Issues' Concepts)

Each category is described by a number of 'key concepts' The key concepts for 'Positive' and 'Phone Issues' are displayed above as examples of what terms are used to categorize comments as belonging to these specific categories. Note: it IS possible to have comments that belong to more than one category.

These results show that the largest dominant theme in the open-ended comments were related to hardware issues (33 concepts). Other, related support categories were 'software' and 'phone issues'.

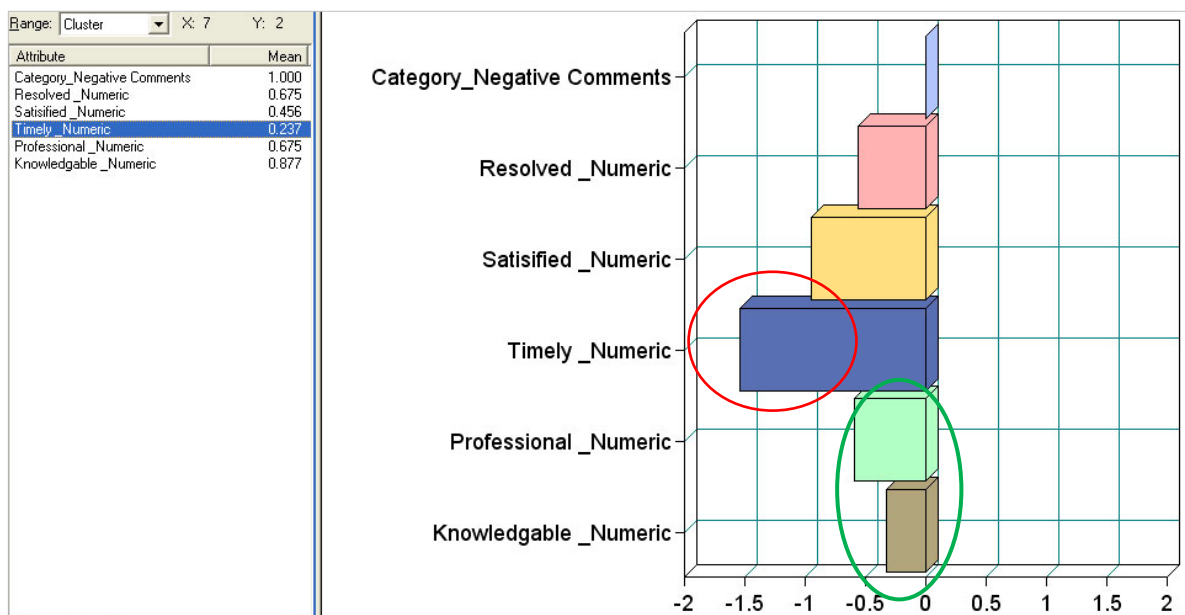
By knowing these themes, these comments can be directly sent to the appropriate departments and/or support areas to determine what steps may be taken to improve customer satisfaction in these areas. In addition, the data collected has now provided a training 'set' by which future comments may be classified according to these categories and sent automatically to the appropriate departments.

Improving Customer Satisfaction

The primary objective of the text analysis was how to improve overall customer satisfaction. To this end, the 'negative' category comments were selected and correlated with the IT organization's five (5) standardized survey questions :

1. Was your issue resolved ? (yes/no)
2. Were you satisfied with the resolution ? (yes/no)
3. Was your issued resolved in a timely manner ? (yes/no)
4. Was your support agent professional ? (yes/no)
5. Was your support agent knowledgeable ? (yes/no)

The significance for each of these questions (measured in significant standard deviations from the mean), for the *negative comments only*, may be seen below :



Significance of Standarized Questions for Negative Comments

From this, we infer that the most significant issue (from users who gave negative comments) gave their **lowest** satisfaction scores on '**Timeliness of response**' to their issues. Also interesting is that these users also gave relatively **high** scores to their support agent's '**Professionalism**' and '**Level of Knowledge**'.

Thus, an internal campaign to improve customer satisfaction might focus first on how quickly customer issues are resolved.

Conclusions / Summary

Text analysis is an extremely useful tool for extracting the sentiment or *meaning* behind words in open-ended survey responses. The benefit of such a tool is that it allows these meanings to be inferred without having to spend tremendous amounts of time reading all the individual text responses.

Once the dominant themes of text comments are extracted into categories, these may be then used to select, sort, or even predict customer behavior. By correlating certain comments (e.g. 'negative') with other structured data, a more concise picture of the customer demographic may be described and used to improve the overall organization.