1997

QS-1000 vs. comment cards: A Study of measurement effectiveness

Jennifer Baker

QS-1000 vs. Comment Cards:
A Study of Measurement Effectiveness

by
Jennifer Baker

A project submitted to the
Faculty of the School of Food, Hotel, and Travel Management
at
Rochester Institute of Technology
in partial fulfillment of the requirements
for the degree
of
Master of Science

May 1997

FORM K

ROCHESTER INSTITUTE OF TECHNOLOGY
School of Food, Hotel and Travel Management
Department of Graduate Studies

M.S. Hospitality-Tourism Management
Statement Granting or Denying Permission to Reproduce Thesis/Project

The author of a thesis or project should complete one of the following statements and include this statement as the page following the title page.

Title of thesis/project: QQS-1000 vs. Comment Cards: A study of Measurement Effectiveness

I, Jennifer Baker, hereby (grant, deny) permission to the Wallace Memorial Library of R.I.T., to reproduce the document titled above in whole or part. Any reproduction will not be for commercial use or profit.

OR

I, ____________________, prefer to be contacted each time a request for reproduction is made. I can be reached at the following address:

6/26/97
Date

Signature

ROCHESTER INSTITUTE OF TECHNOLOGY
School of Food, Hotel and Travel Management
Department of Graduate Studies

M.S. Hospitality-Tourism Management
Presentation of Thesis/Project Findings

Name: Jennifer Baker Date: 6/26/97 SS#: _____

Title of Research: QS-1000 vs. Comment Cards: A Study of Measurement Effectiveness

Specific Recommendations: (Use other side if necessary.)

Thesis Committee: (1) Warren Sackler (Chairperson)

(2) Dr. Marecki

OR (3) _____

Faculty Advisor: _____

Number of Credits Approved: Two

6/27/97 _____

Date Committee Chairperson's Signature

6/27/97 _____

Date Department Chairperson's Signature

Note: **This form will not be signed by the Department Chairperson until all corrections, as suggested in the specific recommendations (above) are completed.**

cc: Departmental Student Record File - Original
Student

Abstract

This study is a comparison of typical customer comment cards in comparison to the QS-1000 survey computer. Each of these instruments can be used to gather data from customers regarding their opinions on service. As competition throughout the service industry increases, the need for businesses to obtain data from their customers is more significant. Service organizations must also find ways to gather this data at a relatively low cost to themselves.

Each of the above survey tools will enable an organization to collect data from customers. The study details collection from two samples and concludes on which is more effective in the areas of readability of data, ease of use, and accuracy.

The study went about collecting data by surveying two samples and cross referencing the data obtained. This enabled the survey manager an opportunity to discuss with customers their opinions of each method. It also allowed for some conclusions to be made as stated above. The QS-1000 was seen as the more effective method due to the ease of analysis as well as the ease of use to both the organization and its customers.

Acknowledgements

To Dr. Marecki for the help you have provided throughout this project and the school year.

To Warren Sackler for not only the help and ideas but also allowing me to learn so much throughout this project and my college experience.

To my family and freinds for the support and the push that has helped me to complete this project and the degree.

To the Graduate Class of 1997 for the ideas and the shoulders to lean on.

Table of Contents

Table of Contents (continued)

Page

Chapter 1: Introduction

Have you ever had a service encounter that afterward you wanted to tell the organization your opinions about? This encounter may have been exceptionally bad or exceptionally good but it was important for you, the customer, to express your feelings to the company. How did you express your feelings to that company? Chances are if you took the time to tell them of the situation of concern to you it was through a comment card. However, many people do not actually take the time to use a comment card from an organization. Many organizations do not openly encourage the use of comment cards. Even if you took the time to find and complete a comment card, what does the organization do with that information? Doesn't it seem antiquated for someone to sit at a desk and input all that information into a statistical program only to determine how many people were dissatisfied with the service given to them by Server #1? It probably is. That is why the invention of the QS-1000 Survey Computer is a better tool than a comment card for an organization.

Problem Statement

Customer feedback is important to organizations in the service industry for many reasons. If a customer is dissatisfied and the organization does not know about it, that organization faces loosing that customer. Many businesses obtain this customer feedback through the use of customer comment cards. But how effective is this method? Is there a more advanced way to obtain this data? The QS-1000 may be the answer. This study

attempts to measure the effectiveness of a typical comment card in comparison to the QS-1000 survey tool.

Background

This study is of importance to me because the QS-1000 survey tool is a technological advancement that can help the service industry to obtain better, more honest feedback from its customers. The accuracy of this computer in relating the customer's views and opinions is of concern to this project. In order for company's to increase the satisfaction of their customers, the customer's opinions must be heard and interpreted correctly.

Some organizations may ask, why not continue using comment cards? The comment cards have always seemed to relay customer opinions in an effective manner. However, the technology exists to make the analysis easier and the actual obtaining of feedback easier. The goal throughout this study has been to compare comment card data with that of the data received from the QS-1000 survey tool. When compared with each other, the effectiveness of each tool and the determination of which is better in terms of reliability, accuracy, and ease for both the organization and the customer will be the focus of this study.

Significance

This study will be of importance to all industries that partake in customer surveys during direct customer contact. This study may also be of importance to the company that

produces the QS-1000 machine. This study is also important to improve customer service and the effectiveness of what a survey relates to a company.

Without this study, the QS-1000 machine may not be utilized to the extent that it may become helpful to many companies. This computer survey may help to raise the service industry to a more technologically advanced age.

This project may help many businesses that want to survey its customers in an effective and non-invasive way. The QS-1000 unit will help any business that is looking for an easy way to read and interpret customer comments without having to pay a survey consultant.

Methodology

The evaluation methodology is used in order to study the difference between a traditional comment card and the QS-1000 unit. Evaluation research would be necessary in order to show the effectiveness of both tools. All the aspects of both tools which will include, but is not limited to, accuracy, readability of feedback, and ease of use will be looked at.

Hypothesis

The QS-1000 is an effective way to measure customer satisfaction. The results will show the need for the QS-1000 tool in order to simplify the collection of data from customers. The results of this study may also increase the sales of this machine.

Assumptions

It is assumed that all guests at the restaurant will be able to read the comment cards available to them. This assumes that all guests are English speaking or at least have minimal knowledge of the language in order to read the questions being asked.

Scope and Limitations

This study has attempted to track and analyze the feedback of customers in a restaurant through different methods. The population for this study will be limited to an upscale casual restaurant. Therefore, this study will only examine that particular type of clientele. This may mean that the data obtained may not be transferred to the customers of another market segment due to differing age, income, or education levels.

The study is also limited by human error. By human error it is meant that the data obtained is restricted to only what the facilitators of my study, the servers, were allowed to collect.

Procedure

As stated above, the population for my study will be guests in an upscale casual restaurant, The Triphammer Grill. The sample will be taken over a four week time frame.

Data will be collected during the four consecutive weeks. The four weeks will be broken down into two week blocks. The first two week block will be used to collect data through the use of a comment card. The servers will be instructed to deliver a comment card to each table at the close of the meal when the check is presented. The server may

ask the table to fill out a comment card to help the restaurant. During the second two week block the QS-1000 survey tool will be delivered at the close of the meal once again with the check. The server will once again ask the customer to complete the survey in order to help the restaurant.

Each sessions tool will contain the same questions in exactly the same format. The only variable that will differ is going to be the method of data collection. The customers will be explained the computer if they are apprehensive about its use.

The customer is the best source of data that an organization has available to it (Massnick, 1997). A company can poll their customers for what the customer wants as well as how the company is doing. This data is valuable to an organization however it must be obtained correctly in order to be effective. Data collection can range from simple to extremely difficult and the results can be similar.

Customer surveys are the best way to gain data about a company's customers. These surveys can range in expense and can also range in accuracy. It doesn't cost much to obtain accurate data however it does require asking the right questions.

Customer Satisfaction

Service is playing an increasingly important role in consumer's decisions to choose one company over another. Society, and the customers within it, are making their opinions known through the use of their buying power. Many prestigious associations, such as the Malcolm Baldrige National Quality Award, place strong emphasis on customer satisfaction and focus. The Baldrige Award gives 25 percent of its points for Customer Focus and Satisfaction (Massnick, 1997). The examiners cite this category as being the biggest loss of points for many companies in the running for this award.

Poor customer satisfaction results not only cause companies to lose awards, they also cause them to lose customers. Research on why customers leave an organization points to dissatisfaction with the service offered by the company, not the product

(Massnick, 1997). The Forum Corporation found in its five years of extensive research that 70% of the reasons that customers left an organization had nothing to do with the product, but was related to the service. This points to the fact that companies need to pay more attention to the customer and their opinions in order to keep customers. After all, research points to the fact that it costs more to attract new customers than it does to keep the customers a company already has satisfied. When a business looks at it that way they should see the importance of listening to their customers and giving them what makes them satisfied.

Customer Feedback

A successful business stays close to its customers (Maynard, 1993). Customers are the company's best resource for obtaining data on what satisfies the customer. After all, customer's determine the company's future (Steitz, 1995). If one customer is dissatisfied they may very well tell many other potential customers while never actually telling the organization. That is why researchers often say that a dissatisfied customer threatens potential customers for an organization (Chaudhry, 1993).

Statistics show that many unhappy customers will not actually speak up about their dissatisfaction on their own. Some may not even speak up when they are asked (Chaudhry, 1993). This is why the use of written material may be more helpful for some organizations. Some customers may not feel comfortable telling a server, manager, or owner to their face that they are dissatisfied. Allowing the customer the opportunity to

anonymously answer a survey may be more effective for some companies to obtain the honest feedback they need to right any wrongs that exist in their organization.

As competition in the marketplace rises, the need for solid feedback from customers is more essential. This feedback needs to be more reliable, systematic, and accurate (Steitz, 1995). Many companies fear obtaining their customer's feedback because they are afraid it may be too negative or that only the negative comments will be given. In fact many companies, such as Olive Garden, find that they receive many complimentary comments as well as negative ones. The negative ones give them the opportunity to correct the problem and many times turn a dissatisfied customer into a satisfied and loyal customer (Chaudhry, 1992). Collecting feedback can be valuable to the company in many ways.

Comment Cards

Comment cards are a good opportunity for customers to be allowed to voice their opinions about the service they have just received without having to confront someone directly. Comment cards may enable a customer to vent their feelings about their experience and prevent them from leaving the business angry (Chaudhry, 1992). This feedback gives the business many options for action, from correcting the problem immediately to contacting the customer to right the wrong.

Comment cards are a good source of feedback collection for a business with many customers that have unknown identities (Maynard, 1993). Comment cards may also be

used by businesses that may know their customers. Typically though they are used by restaurants, stores, and hotels.

The analysis of comment cards may or may not be easy for an organization. Many companies will contract with an outside group to analyze and review the data received through these cards. However, many may opt to review the data themselves. One author recommends that when a private company is hired to do feedback analysis the company should be familiar with the business that is being reviewed (Ravenel, 1992).

Comment cards can also be used as the basis for many other activities in the company. The cards should supply room for the customer to fill in their personal information, such as name, address, and phone number. This will not only enable the manager to contact the customer to fix any problems, but will also give the business the means to generate a marketing mailing list (Chaudhry, 1992). These names that are obtained may also be used to obtain members of a focus group on the organization. The data obtained from the cards will enable a company to develop a history of its customers as well as any complaints that they have.

Many times just asking customers to complete the cards is not enough. A company that is serious about obtaining customer feedback should be willing to offer incentives to the customers that give their feedback. These incentives should not cost the organization much but should be a signal to the customers of that business that the company really cares what their customer thinks.

Computer Surveys

Companies may decide to survey their customers through the use of computer surveys. This is a fairly new form of obtaining customer feedback but it shows great accuracy. The customer feedback industry is becoming flooded with new technology. The new tools are high tech and may assist the companies in a variety of ways (Yovovich, 1995). The capability exists to take the spoken words given to a surveyor and analyze them for patterns and relationships.

A computer survey may increase the accuracy and efficiency of customer surveys. A computer will eliminate the possibility of human error that exists. The computer may also force the customer to be more honest. Once a customer inputs an answer into a computer they may not go back to change it when they review the survey at the end. This may reduce the occurrence of dissatisfied people who just don't want to be mean to an organization so they edit their opinions (Pyle, 1990). A computer survey will also help to reduce the manpower hours that a company puts into surveying its customers. This will reduce feedback costs in the long run. Computer surveys are still fairly new and there is not a great deal of published information available about them.

Feedback Alternatives

Many companies have developed and are using alternatives to traditional comment cards or high tech computers. Focus groups can be developed through comment card data or through business history. These groups enable the business to get together with their customers and actually talk about the issues that both parties feel are important. These groups are primarily held by a third party so as not to sway the data being given.

These meetings could be over a breakfast or with a snack. The common thing to do afterward however is to offer an incentive for the customer's participation (Chaudhry, 1993).

Other alternatives may be the use of a mystery shopper technique. This is where an unfamiliar third party is hired to "check up" on the organization. This is seen as very effective except at some times the only aspects being inspected are those that are important to the management of the company.

Other techniques may be follow-up phone calls, letters, or employee surveys (Weinstein, 1994). These are all good methods to use but may also be considered as unreliable in one way or another. By unreliable I mean that they may not investigate the matters that are of importance to both the management and the customers.

How do you obtain the matters that are important to both the customers and the management? You hold focus groups or test surveys. Preplanning and testing are important to the reliability of the feedback the company is trying to obtain (Henry, 1994). The interpretation of the question to the customer must be the same as that of the company. Without these being in sync, the wrong data may be obtained. This may cause the feedback to be skewed from what is really meant.

Feedback Problems

The obtaining of feedback also comes with problems. The Technical Assistance Research Programs (TARP) sees three common problems with feedback collection. The first is that a company can not interpret the meaning of a dissatisfied measurement. The

company does not understand what this measurement is telling them. They do not understand the implication of this and how to fix it. This can be fixed through the use of a focus group to further identify the problems mentioned.

The second is that companies tend to not ask their customers questions about marketing and the actions needed. This may be fixed by once again holding focus groups.

The third problem is that many companies ask whether the customer is dissatisfied but they never bother to determine why they are not satisfied. This can be fixed through the wording of the question as well as further in-depth research.

The above problems are easily fixable but as the TARP suggests, many companies just do not take the time or effort to fix them. They obtain data that is only half correct. The TARP suggests that a company also tests their customers for their expectations in relation to their satisfaction level. If a customer does not expect good service and when they are asked if they are satisfied, they will say yes. The company will assume that means they are providing great service but the customer really just means it is what they expected-not good (Goodman et. al. 1992).

The next chapter will discuss my analysis of my findings as well as the tools used.

Chapter 3: Results and Findings

The problem chosen to investigate was the effectiveness of a typical comment card versus the use of the QS-1000 survey computer. The study compares the two tools of customer feedback through accuracy of feedback, ease of use to both the internal and external customer, and the readability of feedback.

Customer feedback regarding a service encounter is important to the well being of a service organization. These organizations depend on their customers for income in order to remain viable entities. If an unhappy customer is released from the system, the company's viability may suffer. This is why it is imperative that an organization satisfy its customers and determine recovery techniques for dissatisfied customers. In order to determine the dissatisfied customers and determine the reasons they are dissatisfied the organization must obtain feedback from these customers. This is where my study fits in.

Most organizations use comment cards to survey their customers for satisfaction levels. They were compared to typical comment card results with those of the QS-1000 survey computer and the results will be shown below.

In order to facilitate this study the methods discussed in Chapter 1 were followed. A typical customer survey was created which can be found in Appendix A. That survey was made into comment cards as well as the same questions were inputted into the survey computer. The questions being used were tested in the restaurant for two weeks before running the survey. The questions were also discussed with the staff and management of the restaurant to determine if the items asked about were important to the organization

and their core beliefs. Before the two week preliminary study the questions were also discussed with the external customers of the restaurant to determine if they felt that they asked what the customers felt was important. The results came out as expected however there were some other developments that had originally not been anticipated.

The QS-1000 computer is a small 'box' no larger than a typical alarm clock. It has a four line display screen and 10 buttons under the screen. This survey computer also comes with software to be loaded on a typical office computer. The survey manager, in this case myself, can type as many questions as desired into the computer program. These questions can be printed out for review and editing as shown in Appendix B. The survey box is then connected to the terminal through a telephone cord and the questions are loaded into the machine. Each button on the box serves as an answer to a question. The answers do not have to utilize all ten keys but they can not utilize any more than ten keys. This can be a problem for an organization if they have more than 10 desired responses to one question. However, this also enables the programmer to be sure that the only answers present are the ones that are really needed. The box contains one greeting screen and one closing screen. These can also be programmed with any message that the programmer sees appropriate. The procedure for the cards will be discussed below.

Upon completion of the survey, the box can once again be connected to the computer terminal through the same telephone cord. The survey results are then uploaded into the computer and the results can be viewed on the computer screen. The results are printed as shown in Appendix C. The results are given as how many people responded

with each answer to each questions. It also gives the mean percentage of responses to each questions.

The response printout is very understandable and easy to read. There is no need to be a statistician in order to analyze the results in an easy manner. This makes the QS-1000 an easy tool to be used by any organization if they are looking for just frequencies of occurrences. If the organization is looking for more statistical information the data received can be easily plugged into a statistical program, such as SPSS in order to obtain more analysis. With an SPSS output file, the manager can cross tabulate variables against each other as well as analyze data through the use of a barchart. The manager can also look at each variable separately to obtain a mean, a frequency, a frequency percentage and a cumulative percentage. This analysis will be of help to the manager in many ways. However, if the manager is just interested in looking at the frequency of occurrences of each variable the original QS-1000 data will be sufficient. That data will not cross tabulate variables however so that if the manger is looking at which server has more occurrences of slow service, SPSS will need to be used. Overall, the QS-1000 data would be sufficient if the manager was just looking at the frequency of satisfied diners as compared to those that are dissatisfied. The analysis of the comment cards will be discussed below.

The QS-1000 obtains a more honest answer from the customers. It seems that a customer feels more comfortable answering questions honestly if the results can not be instantly looked at as they can with a written comment card. This is helpful to the manager as far as getting honest responses to how the customers really felt. However,

this is not helpful to the manager in regards to determining what exactly may have gone wrong with that particular customer. If the manager does not know what happened with the particular customer they can not recover the situation. This will not help the manager to satisfy that particular customer. It will also not help the manager to correct the problem from happening again unless that manager knows exactly what went wrong.

The customers were being more honest when using the computer because when comparing the computer results with those of the comment cards there was more incidences where the results did not seem to be so picture perfect. When looking at the card results, it appeared that the Triphammer Grill did nothing wrong. When looking at the computer results the mean scores seemed to show results that were not as perfect. That is so because of the fact that customers did not feel that once they filled out the computer, someone could pick it up and look at it. The customers honesty in answering on the comment cards will be discussed below.

The computer also kept the customer more focused on the questions but at the same time did not give the customer the opportunity to express other opinions. The customer is only given the opportunity to answer what the buttons on the computer allows and not what else they may want to relay to the organization. The opportunities the comment cards give will be discussed below.

The comment cards were done on 81/2' x 5 1/2' gray card stock paper. The print was a script type lettering that matched the upscale atmosphere of the restaurant. A copy of the card can be found in Appendix A. The same questions that were used in the computer were asked on the cards. The same greeting and closing were also used. The

customers were given the cards at the close of the meal when the check was presented. The server asked them to fill it out and also left them with a pen.

Many people added comments along the sides of the cards. This was helpful to the organization because they were ideas that may not have been thought of. Some of these were comments such as "warm the bread", "live music would be great", and "advertise more about river" Other comments that were written in gave us a reason why we had received a low rating. Some of these were " better music", "parking was a problem", "Drinks were slow", and "Too difficult to find" Other comments gave us an answer to other as far as how the restaurant was found. Some of these were " WCMF", "Family", "just found it", and "from the Convention Center staff". One customer was so dissatisfied that he even left his name and address for the restaurant to contact him in order to recover the situation. These comments were all helpful to the restaurant. They were also unable to be added when the computer was used. If the computer had a way to allow the customer to add comments it would have been helpful. The comments added by the customers enabled the manager to go to each server and discuss what had happened after the encounter had occurred.

The comment cards also enabled the manager to instantly review them upon completion. This allowed the manager to confront the individual customer directly or to confront the individual server after the encounter. This made the correction of the problem easier for the organization. This also allowed for the server to not turn in any negative comment cards. It was not believed that this occurred at all but there is an opportunity for this to occur. If the situation was that incentives were given for positive

performance and reprimanding for negative comments, the negative cards may not have been turned in. The use of the cards enabled the individual servers to get instant feedback on their performance. In many cases the servers would bring the cards to the manager and if it was slightly negative, they would have an explanation at hand. Another problem with the comments being added in was that many times the customer would give a positive rating but add a negative comment. This does not surface in the analysis of the data. It was felt that the positive number may be a result of the customer being "afraid" to be totally honest.

The analysis of the card data showed that the means were slightly lower than that of the computer. This therefore proves that more people using the computer used ratings worse than those of the customers using the cards. As stated before, the reason for this is simple. The average diner may not have been totally satisfied. However, that diner may not want to cause extra attention to be brought upon themselves. Therefore, they answer the comment card with a positive response. That diner does this because they do not want that server to pick up the card and read the bad report. When the diner is given the opportunity to answer questions in an "anonymous" manner, they feel that they can be more honest.

Another analysis is that when using the cards, customers had a greater tendency to become confused by the scale being used. Many customers marked answers with a 4 or 5, which meant they were rating it very poorly. However, when the customer's other answers were reviewed or even if they were asked, they had really meant to give it a 1 or 2 meaning very good. This problem did not occur with the use of the computer because

each button was marked for their use. This may have been a simple case of the customer's just did not read the question properly, however the computer gave more accurate results.

The data from each method was run through a simple SPSS file. Each program was the same and the data was analyzed under two separate files. The data was cross-referenced and the differences, as well as the similarities, were compared

Overall, both methods of measuring customer satisfaction are better than having no data collection procedures at all. However, it is felt that for a small establishment that does not want to obtain a huge amount of feedback, the QS-1000 is a great machine to use. The programming is simple and the analysis is easy to do. It does not require the writing of a huge program or any statistical knowledge. Of course, it is possible to obtain more sophisticated data by inputting the data received into SPSS. The cards are also a great way to collect data however they tend to not be as accurate as the computer, as the above information shows. The next chapter will discuss recommendations as well as a summary of conclusions.

The initial problem involved the differences between the QS-1000 survey computer versus a traditional comment card. It is proposed to test each survey tool for accuracy as well as efficiency and ease of use. The original hypothesis was that the QS-1000 survey computer would prove to be a useful tool to survey customers. It was believed that the computer would prove to be more accurate and more efficient for the service industry than a typical comment card.

On a whole, the QS-1000 was found to be more efficient for a service business to utilize. The data obtained from the computer, before running through SPSS, can be helpful in determining the number of satisfied customers as well as the number that are not satisfied. The questions asked may need to be more specific than those that were asked in order to hit all the details that one may want to obtain. However, the questions gave a good basis to perform this study on.

Comment cards were found to be good for obtaining customer's thoughts and extra ideas as well as pinpointing exact problem areas. However, overall, the data obtained is not better than that obtained by using the computer. The data obtained through the comment cards is not as honest as that obtained from the computer. Therefore, the conclusion would be that the data obtained from the QS-1000 is more accurate and more efficient than that of the comment cards.

In speaking with customers during this four week sample, many voiced the opinion to me that they liked the QS-1000 much more than a comment card. The reasons that

they gave made sense to me. Some of them were "it was fun", "it was easier" and "everyone could answer separately". Each of these also proves that the QS-1000 is a better tool for collecting customer opinions.

There are however some limitations to this study. The QS-1000, while being a great tool, is somewhat costly to have multiple machines. This entire survey was completed with one machine. The use of more than one machine would have been helpful in obtaining more data from the sample. Many tables complete their meal at the same time, causing servers to have to determine which table to present the one computer to. The accessibility to more than one QS-1000 unit would be helpful to obtain more data from a broader sample.

Another limitation to this study is that the QS-1000 machine is only useful upon customer and servicer contact. If a service is not performed in one place, the computer will be of no use. For example, many companies will provide a comment card in a bag, such as with a to go order. The QS-1000 will not be useful to those establishments. The unit is too costly and it is not logical to assume that a customer would return the unit.

The first recommendation is to complete this study again at a later date. The use of more specific questions may help to obtain even better results with the QS-1000. This will also enable the computerized survey manufacturers a chance to become more advanced and to increase the technology of this machine.

Another recommendation would be to utilize more than one machine and merge the data together to establish a larger sample size. This study was constrained with only having one machine at the disposal of the researcher.

The final recommendation would be to test this machine out in other organizations throughout the service industry. It would be interesting to see the results from using this in a hotel or other types of restaurants. The results should be similar but it would be interesting to see.

Overall, the QS-1000 may help many organizations to focus more on customers and their opinions. This will lead the service industry to become more customer driven than it already is.

References

Chaudhry, R. (1992) Whining & Dining. Restaurants & Institutions, (July), 102 (17), 12-22.

Chaudhry, R. (1993) Use Customers as Consultants. Restaurants & Institutions, (February), 103, 97-104.

Goodman, J.A., Broetzman, S.M., Adamson, C. (1992) Ineffective--That's the Problem with Customer Satisfaction Surveys. Quality Progress, (May), 25 (5), 35-39.

Massnick, F. (1997) Customer Service Can Kill You. Management Review, (March), 86 (3), 33-35.

Maynard, R. (1993) What Do Customers Think of You Firm. Nation's Business, (April), 81, 62-3.

Pyle, D.L. (1990) How to Interview Your Customers. American Demographics, (December), 12, 44-5.

Ravenel, C.S. (1992) Speaking Out. Lodging Hospitality, (May), 48 (5), 32.

Steitz, D. (1995) Let the Customer Be Your Guide. Nation's Business, (March), 83, 6.

Weinstein, J. (1994) Feedback Ideas: The Sneakier the Better. Restaurants & Institutions, (October), 104 (24), 122.

Withiam, G. (1995) Measuring Guest Perceptions. Cornell Hotel and Restaurant Administration Quarterly, (December), 36 (6), 16.

Yovovich, B.G. (1995) Marketers Mine a New Data Vein. Advertising Age's Business Marketing, (March), 80 (3), 3,25.

_____(1996) What to do with Feedback?. Lodging Hospitality, (February), 52 (2), 33.

_____ (1996) How Virginia Tech Rounds up Feedback. Food Management, (December), 31(12), 41.

Appendix A:

Comment Card Sample

Thank you for choosing the Triphammer Grill. Please take a moment to tell us what you think.

Were you greeted promptly when you entered the restaurant?
Yes or No

What is your server's name? (please circle one)
Sue John Russell Mindy Laura Yvette
Gwen Jen Julie Not Sure

On a scale of 1 to 5, 1 being very friendly and 5 being very unfriendly, rate the courtesy of your server? _____

How did the meal measure up to your expectations?(circle one)
Excellent Very Good Good Fair Poor

The overall quality of the food served to you was: (circle one)
Excellent Very Good Good Fair Poor

Did the speed of the meal meet your needs? Yes No
If not, was it (circle one) too fast or too slow?

Please rate the overall dining atmosphere of the facility.(circle one)
Excellent Very Good Good Fair Poor

On a scale of 1 to 5, with 1 being very easy and 5 being very difficult, rate the ease in which you found our location. _____

How did you find out about us? (circle one) Television Radio
Newspaper Hotel Clerk From a Friend Other

On a scale of 1 to 5, with 1 being excellent and 5 being poor, rate your overall dining experience. _____

Based on today's visit will you return to our restaurant? Yes No

Thank you for your time!

Appendix B:

QS-1000 Questions

TRIP LUNCH FIRST TRY

1: GREETING, PROMPT

Text: WERE YOU GREETED PROMPTLY WHEN
YOU ENTERED THE RESTAURANT?

1= YES 2=NO

2: SERVER

Text: WHAT IS YOUR SERVER'S NAME?
1=SUE 2=JOHN 3=RUSSELL 4=MINDY
5=LAURA 6=YVETTE 7= GWEN
8=JEN 9=JULIE 10=NOT SURE

3: SERVER COURTESY

Text: ON A SCALE OF 1-5 PLEASE RATE
THE COURTESY OF YOUR SERVER?
1= VERY FRIENDLY 5=VERY UNFRIENDLY

4: MEAL EXPECTATIONS

Text: HOW DID THE MEAL MEASURE UP TO
YOUR EXPECTATIONS?
1=EXCELLENT 2=VERY GOOD 3=GOOD
4= FAIR 5=POOR

5: MEAL QUALITY

Text: THE OVERALL QUALITY OF THE FOOD
SERVED TO YOU WAS:
1=EXCELLENT 2=VERY GOOD
3=GOOD 4=FAIR 5=POOR

6: SPEED

Text: DID THE SPEED OF THE MEAL MEET
YOUR NEEDS?
1=YES 2=NO

Answering 1 skips to 8

TRIP LUNCH FIRST TRY

7: BRANCH

Text: THE MEAL SPEED DID NOT MEET
YOUR NEEDS BECAUSE:
1=IT WAS TOO FAST 2=IT WAS TOO SLOW

8: ATMOSPHERE

Text: PLEASE RATE THE OVERALL DINING
ATMOSPHERE OF THE FACILITY
1=EXCELLENT 2=VERY GOOD
3=GOOD 4=FAIR 5=POOR

9: LOCATION

Text: ON A SCALE OF 1-5, PLEASE RATE
THE EASE IN WHICH YOU FOUND OUR
LOCATION
1=VERY EASY 5=VERY DIFFICULT

10: ADVERTISING

Text: HOW DID YOU FIND OUT ABOUT US?
1=TELEVISION 2=RADIO 3=NEWSPAPER
4= HOTEL CLERK 5=FROM A FRIEND
6=OTHER

11: OVERALL EXPERIENCE

Text: ON A SCALE OF 1 TO 5, RATE YOUR
OVERALL DINING EXPERIENCE
1=EXCELLENT 5=POOR

12: RETURN CUSTOMER

Text: BASED ON TODAY'S VISIT, WILL
YOU RETURN TO OUR RESTAURANT
1=YES 2=NO

Appendix C:

QS-1000 Results

data file: thesis1
06/02/97, 12:12pm, 78/86

	1	2	3	4	5	6	7	8	9	10	TOTAL	MEAN/%

Text: WERE YOU GREETED PROMPTLY WHEN
YOU ENTERED THE RESTAURANT?

1= YES 2=NO

1	2	TOTAL	MEAN/%
57	8	65	87/12

2: SERVER

Text: WHAT IS YOUR SERVER'S NAME?
1=SUE 2=JOHN 3=RUSSELL 4=MINDY
5=LAURA 6=YVETTE 7= GWEN
8=JEN 9=JULIE 10=NOT SURE

1	2	3	4	5	6	7	8	9	10	TOTAL	MEAN/%
13	8	14	2	6	4	2	7	2	6	64	4.4

3: SERVER COURTESY

Text: ON A SCALE OF 1-5 PLEASE RATE
THE COURTESY OF YOUR SERVER?
1= VERY FRIENDLY 5=VERY UNFRIENDLY

1	2	3	4	5	TOTAL	MEAN/%
45	10	2	1	6	64	1.6

4: MEAL EXPECTATIONS

Text: HOW DID THE MEAL MEASURE UP TO
YOUR EXPECTATIONS?
1=EXCELLENT 2=VERY GOOD 3=GOOD
4= FAIR 5=POOR

1	2	3	4	5	TOTAL	MEAN/%
35	24	4	0	0	63	55/38/6/0/0

	1	2	3	4	5	6	7	6	9	10	TOTAL	MEAN/%

	1	2	3	4	5	6	7	8	9	10	TOTAL	MEAN/%

Text: THE OVERALL QUALITY OF THE FOOD
SERVED TO YOU WAS:
1=EXCELLENT 2=VERY GOOD
3=GOOD 4=FAIR 5=POOR

	36	24	3	0	1						64	56/37/4/0/1

6: SPEED

Text: DID THE SPEED OF THE MEAL MEET
YOUR NEEDS?
1=YES 2=NO

Answering 1 skips to 8

	62	2	0	0	0						64	1.0

7: BRANCH

Text: THE MEAL SPEED DID NOT MEET
YOUR NEEDS BECAUSE:
1=IT WAS TOO FAST 2=IT WAS TOO SLOW

	0	2									2	0/100

8: ATMOSPHERE

Text: PLEASE RATE THE OVERALL DINING
ATMOSPHERE OF THE FACILITY
1=EXCELLENT 2=VERY GOOD
3=GOOD 4=FAIR 5=POOR

	33	22	9	0	0						64	51/34/14/0/0

	1	2	3	4	5	6	7	8	9	10	TOTAL	MEAN/%

TRIP LUNCH FIRST TRY

	1	2	3	4	5	6	7	6	9	10	TOTAL	MEAN/%

Text: ON A SCALE OF 1-5, PLEASE RATE
THE EASE IN WHICH YOU FOUND OUR
LOCATION
1=VERY EASY 5=VERY DIFFICULT

29	12	18	2	3		64	2.0

10: ADVERTISING

Text: HOW DID YOU FIND OUT ABOUT US?
1=TELEVISION 2=RADIO 3=NEWSPAPER
4= HOTEL CLERK 5=FROM A FRIEND
6=OTHER

1	1	2	5	35	20	64	1/1/3/7/54/31

11: OVERALL EXPERIENCE

Text: ON A SCALE OF 1 TO 5, RATE YOUR
OVERALL DINING EXPERIENCE
1=EXCELLENT 5=POOR

38	22	2	1	1	64	1.5

12: RETURN CUSTOMER

Text: BASED ON TODAY'S VISIT, WILL
YOU RETURN TO OUR RESTAURANT
1=YES 2=NO

64	1					65	98/1

	1	2	3	4	5	6	7	8	9	10	TOTAL	MEAN/%

Appendix D:

SPSS Output for
Comment Cards

VAX SPSS VAX/VMS Site License Number 12134
This software is functional through June 30, 1997.

```
  1 0 UNNUMBERED
  2 0 SET WIDTH = 80
  3 FILE HANDLE Cards/NAME='CARDS.DAT'
  4 DATA LIST FILE = Cards/
  5 VAR01 1 VAR02 2-3 VAR03 4 VAR04 5 VAR05 6 VAR06 7
  6 VAR07 8 VAR08 9 VAR09 10 VAR10 11 VAR11 12 VAR12 13
```

This command will read 1 records from USER15:[JLB8402]CARDS.DAT;

Variable	Rec	Start	End	Format
VAR01	1	1	1	F1.0
VAR02	1	2	3	F2.0
VAR03	1	4	4	F1.0
VAR04	1	5	5	F1.0
VAR05	1	6	6	F1.0
VAR06	1	7	7	F1.0
VAR07	1	8	8	F1.0
VAR08	1	9	9	F1.0
VAR09	1	10	10	F1.0
VAR10	1	11	11	F1.0
VAR11	1	12	12	F1.0
VAR12	1	13	13	F1.0

```
  7 VARIABLE LABELS VAR01 'GREETING'
  8 VAR02 'SERVERS NAME'
  9 VAR03 'COURTESY OF SERVER'
 10 VAR04 'MEAL VS EXPECTATIONS'
 11 VAR05 'FOOD QUALITY'
 12 VAR06 'SPEED'
 13 VAR07 'FAST VS SLOW'
 14 VAR08 'DINING ATMOSPHERE'
 15 VAR09 'EASE OF LOCATION'
 16 VAR10 'SOURCE'
 17 VAR11 'OVERALL EXPERIENCE'
 18 VAR12 'RETURN VISIT'
 19 VALUE LABELS VAR01 1'YES' 2'NO'/
 20 VAR02 01'SUE' 02'JOHN' 03'RUSSELL' 04'MINDY' 05'LAURA'
 21       06'YVETTE' 07'GWEN' 08'JEN' 09'JULIE' 10'NOT SURE'/
 22 VAR03 1'VERY FRIENDLY' 2'FRIENDLY' 3'MEDIOCRE'
 23  4'UNFRIENDLY' 5'VERY UNFRIENDLY'/
 24 VAR04 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 25 VAR05 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 26 VAR06 1'YES' 2'NO'/
 27       VAR07 1'TOO FAST' 2'TOO SLOW'/
 28 VAR08 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 29 VAR09 1'VERY EASY' 2'EASY' 3'FAIR' 4'DIFFICULT' 5'TOO DIFFICULT'/
 30 VAR10 1'TELEVISION' 2'RADIO' 3'NEWSPAPER' 4'HOTEL CLERK'
 31  5'FROM A FRIEND' 6'OTHER'/
 32 VAR11 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
```



```
 33 VAR12 1'YES' 2'NO'/
 34 FREQUENCIES VARIABLES = VAR01 TO VAR12
 35 /STATISTICS = ALL
```

There are 6,577,296 bytes of memory available.

Memory allows a total of 32,767 values accumulated across all variables.

There may be up to 8,192 value labels for each variable.

VAR01 GREETING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	3	3.6	3.6	3.6
YES	1	72	86.7	86.7	90.4
NO	2	8	9.6	9.6	100.0
	Total	83	100.0	100.0	

Mean	1.060	Std err	.040	Median	1.000
Mode	1.000	Std dev	.361	Variance	.130
Kurtosis	4.619	S E Kurt	.523	Skewness	.808
S E Skew	.264	Range	2.000	Minimum	.000
Maximum	2.000	Sum	88.000		

Valid cases 83 Missing cases 0

VAR02 SERVERS NAME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.2	1.2	1.2
SUE	1	23	27.7	27.7	28.9
JOHN	2	7	8.4	8.4	37.3
RUSSELL	3	23	27.7	27.7	65.1
MINDY	4	2	2.4	2.4	67.5
LAURA	5	15	18.1	18.1	85.5
GWEN	7	3	3.6	3.6	89.2
JULIE	9	3	3.6	3.6	92.8
NOT SURE	10	6	7.2	7.2	100.0
	Total	83	100.0	100.0	

Mean	3.578	Std err	.295	Median	3.000
Mode	1.000	Std dev	2.687	Variance	7.222
Kurtosis	.533	S E Kurt	.523	Skewness	1.132
S E Skew	.264	Range	10.000	Minimum	.000
Maximum	10.000	Sum	297.000		

Valid cases 83 Missing cases 0

VAR03 COURTESY OF SERVER

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent

VERY FRIENDLY	1	61	73.5	73.5	73.5
FRIENDLY	2	15	18.1	18.1	91.6
UNFRIENDLY	4	5	6.0	6.0	97.6
VERY UNFRIENDLY	5	2	2.4	2.4	100.0
Total		83	100.0	100.0	

Mean	1.458	Std err	.105	Median	1.000
Mode	1.000	Std dev	.954	Variance	.910
Kurtosis	5.252	S E Kurt	.523	Skewness	2.413
S E Skew	.264	Range	4.000	Minimum	1.000
Maximum	5.000	Sum	121.000		

Valid cases 83 Missing cases 0

VAR04 MEAL VS EXPECTATIONS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.2	1.2	1.2
EXCELLENT	1	40	48.2	48.2	49.4
VERY GOOD	2	33	39.8	39.8	89.2
GOOD	3	9	10.8	10.8	100.0
Total		83	100.0	100.0	

Mean	1.602	Std err	.077	Median	2.000
Mode	1.000	Std dev	.697	Variance	.486
Kurtosis	-.504	S E Kurt	.523	Skewness	.508
S E Skew	.264	Range	3.000	Minimum	.000
Maximum	3.000	Sum	133.000		

Valid cases 83 Missing cases 0

VAR05 FOOD QUALITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
EXCELLENT	1	40	48.2	48.2	48.2
VERY GOOD	2	33	39.8	39.8	88.0
GOOD	3	9	10.8	10.8	98.8
FAIR	4	1	1.2	1.2	100.0
Total		83	100.0	100.0	

Mean	1.651	Std err	.079	Median	2.000
Mode	1.000	Std dev	.723	Variance	.523
Kurtosis	.150	S E Kurt	.523	Skewness	.842
S E Skew	.264	Range	3.000	Minimum	1.000
Maximum	4.000	Sum	137.000		

Valid cases 83 Missing cases 0

VAR06 SPEED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	79	95.2	95.2	95.2
NO	2	4	4.8	4.8	100.0
	Total	83	100.0	100.0	

Mean	1.048	Std err	.024	Median	1.000
Mode	1.000	Std dev	.215	Variance	.046
Kurtosis	16.871	S E Kurt	.523	Skewness	4.297
S E Skew	.264	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	87.000		

Valid cases 83 Missing cases 0

VAR07 FAST VS SLOW

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	79	95.2	95.2	95.2
TOO FAST	1	1	1.2	1.2	96.4
TOO SLOW	2	3	3.6	3.6	100.0
	Total	83	100.0	100.0	

Mean	.084	Std err	.043	Median	.000
Mode	.000	Std dev	.389	Variance	.151
Kurtosis	20.438	S E Kurt	.523	Skewness	4.629
S E Skew	.264	Range	2.000	Minimum	.000
Maximum	2.000	Sum	7.000		

Valid cases 83 Missing cases 0

VAR08 DINING ATMOSPHERE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
EXCELLENT	1	37	44.6	44.6	44.6
VERY GOOD	2	36	43.4	43.4	88.0
GOOD	3	8	9.6	9.6	97.6
FAIR	4	2	2.4	2.4	100.0
	Total	83	100.0	100.0	

Mean	1.699	Std err	.082	Median	2.000
Mode	1.000	Std dev	.745	Variance	.555
Kurtosis	.648	S E Kurt	.523	Skewness	.919

S E Skew .264 Range 5.000 Minimum 1.000
Maximum 4.000 Sum 141.000

Valid cases 83 Missing cases 0

VAR09 EASE OF LOCATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	2	2.4	2.4	2.4
VERY EASY	1	43	51.8	51.8	54.2
EASY	2	21	25.3	25.3	79.5
FAIR	3	15	18.1	18.1	97.6
DIFFICULT	4	1	1.2	1.2	98.8
TOO DIFFICULT	5	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

Mean	1.675	Std err	.102	Median	1.000
Mode	1.000	Std dev	.925	Variance	.856
Kurtosis	.871	S E Kurt	.523	Skewness	.984
S E Skew	.264	Range	5.000	Minimum	.000
Maximum	5.000	Sum	139.000		

Valid cases 83 Missing cases 0

VAR10 SOURCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	5	6.0	6.0	6.0
RADIO	2	2	2.4	2.4	8.4
NEWSPAPER	3	3	3.6	3.6	12.0
HOTEL CLERK	4	2	2.4	2.4	14.5
FROM A FRIEND	5	39	47.0	47.0	61.4
OTHER	6	32	38.6	38.6	100.0
	Total	83	100.0	100.0	

Mean	4.916	Std err	.166	Median	5.000
Mode	5.000	Std dev	1.516	Variance	2.298
Kurtosis	4.716	S E Kurt	.523	Skewness	-2.243
S E Skew	.264	Range	6.000	Minimum	.000
Maximum	6.000	Sum	408.000		

Valid cases 83 Missing cases 0

VAR11 OVERALL EXPERIENCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.2	1.2	1.2
EXCELLENT	1	44	53.0	53.0	54.2
VERY GOOD	2	31	37.3	37.3	91.6
GOOD	3	4	4.8	4.8	96.4
FAIR	4	3	3.6	3.6	100.0
	Total	83	100.0	100.0	

Mean	1.566	Std err	.084	Median	1.000
Mode	1.000	Std dev	.768	Variance	.590
Kurtosis	1.929	S E Kurt	.523	Skewness	1.261
S E Skew	.264	Range	4.000	Minimum	.000
Maximum	4.000	Sum	130.000		

Valid cases 83 Missing cases 0

VAR12 RETURN VISIT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	3	3.6	3.6	3.6
YES	1	78	94.0	94.0	97.6
NO	2	2	2.4	2.4	100.0
	Total	83	100.0	100.0	

Mean	.988	Std err	.027	Median	1.000
Mode	1.000	Std dev	.247	Variance	.061
Kurtosis	14.462	S E Kurt	.523	Skewness	-.683
S E Skew	.264	Range	2.000	Minimum	.000
Maximum	2.000	Sum	82.000		

Valid cases 83 Missing cases 0

Preceding task required .27 seconds CPU time; .52 seconds elapsed.

```
 36 CROSSTABS TABLES = VAR02 BY VAR03/
 37 STATISTICS = ALL
```

There are 6,578,896 bytes of memory available.

Memory allows for 32,767 cells with 2 dimensions for general CROSSTABS.

VAR02 SERVERS NAME by VAR03 COURTESY OF SERVER

VAR03	Page 1 of 1			
Count |				
|VERY FRI	FRIENDLY	UNFRIEND	VERY UNF	
|ENDLY	LY	RIENDLY	Row	

VAR02	0	1	2	4	5	Total
0			1			1
						1.2
1	18	3	2			23
SUE						27.7
2	4	2	1			7
JOHN						8.4
3	16	5	1	1		23
RUSSELL						27.7
4	2					2
MINDY						2.4
5	13	2				15
LAURA						18.1
7	2	1				3
GWEN						3.6
9	3					3
JULIE						3.6
10	3	2		1		6
NOT SURE						7.2
Column	61	15	5	2		83
Total	73.5	18.1	6.0	2.4		100.0

Chi-Square	Value	DF	Significance
Pearson	30.06243	24	.18269
Likelihood Ratio	20.54589	24	.66535
Mantel-Haenszel test for linear association	.02934	1	.86400

Minimum Expected Frequency - .024
Cells with Expected Frequency < 5 - 32 OF 36 (88.9%)

Statistic	Value	ASE1	Approximate T-value	Significance
Phi	.60183			.18269 *1
Cramer's V	.34747			.18269 *1
Contingency Coefficient	.51565			.18269 *1
Lambda :				
symmetric	.04878	.03700	1.27728	
with VAR02 dependent	.05000	.04873	1.00608	
with VAR03 dependent	.04545	.04441	1.00608	
Goodman & Kruskal Tau :				
with VAR02 dependent	.02629	.01090		.83796 *2
with VAR03 dependent	.10249	.03666		.39428 *2
Uncertainty Coefficient :				
symmetric	.09534	.03379	2.59151	.66535 *3
with VAR02 dependent	.06869	.02528	2.59151	.66535 *3

```
with VAR03  dependent    [illegible]

Kendall's Tau-b          -.04247    .10011   -.42309
Kendall's Tau-c          -.03290    .07777   -.42309
Gamma                    -.07173    .16930   -.42309
Somers' D :
  symmetric              -.04042    .09527   -.42309
  with VAR02   dependent     -.05834    .13736   -.42309
  with VAR03   dependent     -.03092    .07303   -.42309


Pearson's R              -.01892    .13763   -.17027    .86522
Spearman Correlation         -.04864    .11501   -.43830    .66234
Eta :
  with VAR02   dependent      .26848
  with VAR03   dependent      .39358
```

11-Jun-97 SPSS RELEASE 4.1 FOR VAX/VMS Page 1213:46:24 SPSS VAX/VMS Site on VAXA::

>Warning # 10390
>Kappa cannot be computed for this table because row values do not equal column
>values.

*1 Pearson chi-square probability
*2 Based on chi-square approximation
*3 Likelihood ratio chi-square probability

Relative Risk Estimate cannot be computed

Number of Missing Observations: 0

11-Jun-97 SPSS RELEASE 4.1 FOR VAX/VMS Page 1313:46:24 SPSS VAX/VMS Site on VAXA::

Preceding task required .22 seconds CPU time; .56 seconds elapsed.

```
 38  CROSSTABS TABLES = VAR02 BY VAR06/
 39  STATISTICS = ALL
```

There are 6,578,896 bytes of memory available.

Memory allows for 32,767 cells with 2 dimensions for general CROSSTABS.

11-Jun-97 SPSS RELEASE 4.1 FOR VAX/VMS Page 1413:46:24 SPSS VAX/VMS Site on VAXA::

VAR02 SERVERS NAME by VAR06 SPEED

```
            VAR06      Page 1 of 1
       Count |
             |YES      NO
             |                Row
             |    1 |    2 | Total
VAR02   --------+--------+--------+
          0 |    1 |        |    1
            |      |        |   1.2
            +--------+--------+
          1 |   23 |        |   23
 SUE        |      |        |  27.7
            +--------+--------+
```

2	6	1	7
JOHN			8.4
3	22	1	23
RUSSELL			27.7
4	2		2
MINDY			2.4
5	14	1	15
LAURA			18.1
7	3		3
GWEN			3.6
9	3		3
JULIE			3.6
10	5	1	6
NOT SURE			7.2
Column	79	4	83
Total	95.2	4.8	100.0

Chi-Square	Value	DF	Significance
Pearson	4.94651	8	.76328
Likelihood Ratio	5.34130	8	.72055
Mantel-Haenszel test for linear association	1.17607	1	.27816

Minimum Expected Frequency - .048
Cells with Expected Frequency < 5 - 13 OF 18 (72.2%)

Statistic	Value	ASE1	Approximate T-value	Significance
Phi	.24412			.76328 *1
Cramer's V	.24412			.76328 *1
Contingency Coefficient	.23716			.76328 *1

Lambda :					
symmetric		.01563	.01527	1.00608	
with VAR02	dependent	.01667	.01653	1.00608	
with VAR06	dependent	.00000	.00000		
Goodman & Kruskal Tau :					
with VAR02	dependent	.00918	.00545		.64480 *2
with VAR06	dependent	.05960	.05740		.76959 *2
Uncertainty Coefficient :					
symmetric		.03226	.02002	1.54487	.72055 *3
with VAR02	dependent	.01786	.01152	1.54487	.72055 *3
with VAR06	dependent	.16658	.07698	1.54487	.72055 *3

Kendall's Tau-b	.10193	.08737	1.05771
Kendall's Tau-c	.05516	.05215	1.05771
Gamma	.35316	.28709	1.05771
Somers' D :			
symmetric	.06199	.05313	1.05771

with VAR02 dependent .30005 .24706 1.05771
with VAR06 dependent .03456 .03271 1.05771

Pearson's R .11976 .12714 1.08565 .28085
Spearman Correlation .11439 .09798 1.03634 .30313
Eta :
with VAR02 dependent .11976
with VAR06 dependent .24412

>Warning # 10390
>Kappa cannot be computed for this table because row values do not equal column
>values.

*1 Pearson chi-square probability
*2 Based on chi-square approximation
*3 Likelihood ratio chi-square probability

Relative Risk Estimate cannot be computed

Number of Missing Observations: 0

Preceding task required .14 seconds CPU time; .24 seconds elapsed.

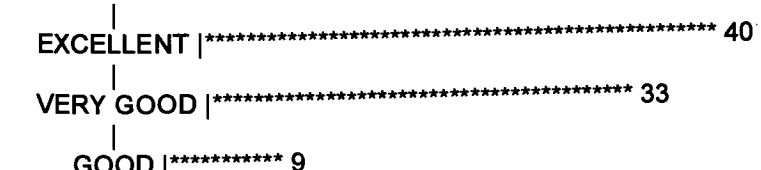
```
 40 FREQUENCIES VARIABLES = VAR05/
 41 BARCHART
```

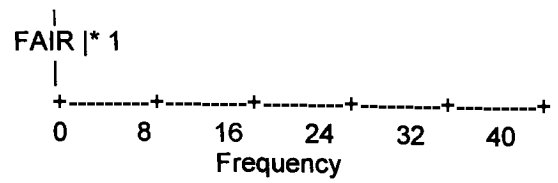
There are 6,578,896 bytes of memory available.

Memory allows a total of 32,767 values accumulated across all variables.
There may be up to 8,192 value labels for each variable.

VAR05 FOOD QUALITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
EXCELLENT	1	40	48.2	48.2	48.2
VERY GOOD	2	33	39.8	39.8	88.0
GOOD	3	9	10.8	10.8	98.8
FAIR	4	1	1.2	1.2	100.0
	Total	83	100.0	100.0	





Valid cases 83 Missing cases 0

Preceding task required .02 seconds CPU time; .04 seconds elapsed.

42 FINISH

42 command lines read.
0 errors detected.
2 warnings issued.
1 seconds CPU time.
2 seconds elapsed time.
End of job.

Appendix E:

SPSS Output for
QS-1000 Data

VAX SPSS VAX/VMS Site License Number 12134
This software is functional through June 30, 1997.

```
  1 0 UNNUMBERED
  2 0 SET WIDTH=80
  3 FILE HANDLE COMPUTER/NAME='COMPUTER.DAT'
  4 DATA LIST FILE = COMPUTER/
  5 VAR01 1 VAR02 2-3 VAR03 4 VAR04 5 VAR05 6
  6 VAR06 7 VAR07 8 VAR08 9 VAR09 10 VAR10 11 VAR11 12 VAR12 13
```

This command will read 1 records from USER15:[JLB8402]COMPUTER.DAT;

Variable	Rec	Start	End	Format
VAR01	1	1	1	F1.0
VAR02	1	2	3	F2.0
VAR03	1	4	4	F1.0
VAR04	1	5	5	F1.0
VAR05	1	6	6	F1.0
VAR06	1	7	7	F1.0
VAR07	1	8	8	F1.0
VAR08	1	9	9	F1.0
VAR09	1	10	10	F1.0
VAR10	1	11	11	F1.0
VAR11	1	12	12	F1.0
VAR12	1	13	13	F1.0

```
  7 VARIABLE LABELS VAR01 'GREETING'
  8 VAR02 'SERVERS NAME'
  9 VAR03 'COURTESY OF SERVER'
 10 VAR04 'MEAL VS EXPECTATIONS'
 11 VAR05 'FOOD QUALITY'
 12 VAR06 'SPEED'
 13 VAR07 'FAST VS SLOW'
 14 VAR08 'DINING ATMOSPHERE'
 15 VAR09 'EASE OF LOCATION'
 16 VAR10 'SOURCE'
 17 VAR11 'OVERALL EXPERIENCE'
 18 VAR12 'RETURN VISIT'
 19 VALUE LABELS VAR01 1'YES' 2'NO'/
 20 VAR02 1'SUE' 2'JOHN' 3'RUSSELL' 4'MINDY' 5'LAURA'
 21 6'YVETTE' 7'GWEN' 8'JEN' 9'JULIE' 10'NOT SURE'/
 22 VAR03 1'VERY FRIENDLY' 2'FRIENDLY' 3'MEDIOCRE'
 23 4'UNFRIENDLY' 5'VERY UNFRIENDLY'/
 24 VAR04 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 25 VAR05 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 26 VAR06 1'YES' 2'NO'/
 27 VAR07 1'TOO FAST' 2'TOO SLOW'/
 28 VAR08 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
 29 VAR09 1'VERY EASY' 2'EASY' 3'FAIR' 4'DIFFICULT' 5'VERY DIFFICULT'/
 30 VAR10 1'TELEVISION' 2'RADIO' 3'NEWSPAPER' 4'HOTEL CLERK'
 31 5'FROM A FRIEND' 6'OTHER'/
 32 VAR11 1'EXCELLENT' 2'VERY GOOD' 3'GOOD' 4'FAIR' 5'POOR'/
```



```
 33 VAR12 1'YES' 2'NO'/
 34 FREQUENCIES VARIABLES = VAR01 TO VAR12/
 35 STATISTICS = ALL
```

There are 6,577,296 bytes of memory available.

Memory allows a total of 32,767 values accumulated across all variables.

There may be up to 8,192 value labels for each variable.

VAR01 GREETING

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	58	86.6	87.9	87.9
NO	2	8	11.9	12.1	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.121	Std err	.040	Median	1.000
Mode	1.000	Std dev	.329	Variance	.108
Kurtosis	3.756	S E Kurt	.582	Skewness	2.376
S E Skew	.295	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	74.000		

Valid cases 66 Missing cases 1

VAR02 SERVERS NAME

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
SUE	1	13	19.4	19.7	21.2
JOHN	2	8	11.9	12.1	33.3
RUSSELL	3	14	20.9	21.2	54.5
MINDY	4	2	3.0	3.0	57.6
LAURA	5	6	9.0	9.1	66.7
YVETTE	6	4	6.0	6.1	72.7
GWEN	7	2	3.0	3.0	75.8
JEN	8	8	11.9	12.1	87.9
JULIE	9	2	3.0	3.0	90.9
NOT SURE	10	6	9.0	9.1	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	4.379	Std err	.375	Median	3.000
Mode	3.000	Std dev	3.047	Variance	9.285
Kurtosis	-1.036	S E Kurt	.582	Skewness	.543
S E Skew	.295	Range	10.000	Minimum	.000
Maximum	10.000	Sum	289.000		

Valid cases 66 Missing cases 1

VAR03 COURTESY OF SERVER

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
VERY FRIENDLY	1	45	67.2	68.2	69.7
FRIENDLY	2	11	16.4	16.7	86.4
MEDIOCRE	3	2	3.0	3.0	89.4
UNFRIENDLY	4	1	1.5	1.5	90.9
VERY UNFRIENDLY	5	6	9.0	9.1	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.621	Std err	.152	Median	1.000
Mode	1.000	Std dev	1.237	Variance	1.531
Kurtosis	2.866	S E Kurt	.582	Skewness	1.973
S E Skew	.295	Range	5.000	Minimum	.000
Maximum	5.000	Sum	107.000		

Valid cases 66 Missing cases 1

VAR04 MEAL VS EXPECTATIONS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	2	3.0	3.0	3.0
EXCELLENT	1	35	52.2	53.0	56.1
VERY GOOD	2	25	37.3	37.9	93.9
GOOD	3	4	6.0	6.1	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.470	Std err	.081	Median	1.000
Mode	1.000	Std dev	.661	Variance	.438
Kurtosis	-.063	S E Kurt	.582	Skewness	.443
S E Skew	.295	Range	3.000	Minimum	.000
Maximum	3.000	Sum	97.000		

Valid cases 66 Missing cases 1

VAR05 FOOD QUALITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
EXCELLENT	1	37	55.2	56.1	57.6
VERY GOOD	2	25	37.3	37.9	95.5
GOOD	3	3	4.5	4.5	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.455	Std err	.075	Median	1.000

Mode	1.000	Std dev	.012	Variance	.000
Kurtosis	-.095	S E Kurt	.582	Skewness	.593
S E Skew	.295	Range	3.000	Minimum	.000
Maximum	3.000	Sum	96.000		

Valid cases 66 Missing cases 1

VAR06 SPEED

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
YES	1	63	94.0	95.5	97.0
NO	2	2	3.0	3.0	100.0
	.	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.015	Std err	.026	Median	1.000
Mode	1.000	Std dev	.214	Variance	.046
Kurtosis	20.409	S E Kurt	.582	Skewness	1.393
S E Skew	.295	Range	2.000	Minimum	.000
Maximum	2.000	Sum	67.000		

Valid cases 66 Missing cases 1

VAR07 FAST VS SLOW

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	64	95.5	97.0	97.0
TOO SLOW	2	2	3.0	3.0	100.0
	1	1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	.061	Std err	.043	Median	.000
Mode	.000	Std dev	.345	Variance	.119
Kurtosis	30.374	S E Kurt	.582	Skewness	5.608
S E Skew	.295	Range	2.000	Minimum	.000
Maximum	2.000	Sum	4.000		

Valid cases 66 Missing cases 1

VAR08 DINING ATMOSPHERE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent

EXCELLENT	1	33	49.3	50.0	51.5
VERY GOOD	2	23	34.3	34.8	86.4
GOOD	3	9	13.4	13.6	100.0
.		1	1.5	Missing	
Total		67	100.0	100.0	

Mean	1.606	Std err	.091	Median	1.000
Mode	1.000	Std dev	.742	Variance	.550
Kurtosis	-.599	S E Kurt	.582	Skewness	.556
S E Skew	.295	Range	3.000	Minimum	.000
Maximum	3.000	Sum	106.000		

Valid cases 66 Missing cases 1

VAR09 EASE OF LOCATION

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
VERY EASY	1	30	44.8	45.5	47.0
EASY	2	12	17.9	18.2	65.2
FAIR	3	18	26.9	27.3	92.4
DIFFICULT	4	2	3.0	3.0	95.5
VERY DIFFICULT	5	3	4.5	4.5	100.0
		1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.985	Std err	.142	Median	2.000
Mode	1.000	Std dev	1.157	Variance	1.338
Kurtosis	.095	S E Kurt	.582	Skewness	.830
S E Skew	.295	Range	5.000	Minimum	.000
Maximum	5.000	Sum	131.000		

Valid cases 66 Missing cases 1

VAR10 SOURCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
TELEVISION	1	1	1.5	1.5	3.0
RADIO	2	1	1.5	1.5	4.5
NEWSPAPER	3	2	3.0	3.0	7.6
HOTEL CLERK	4	5	7.5	7.6	15.2
FROM A FRIEND	5	35	52.2	53.0	68.2
OTHER	6	21	31.3	31.8	100.0
		1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	5.000	Std err	.140	Median	5.000

Mode	5.000	Std dev	1.157	Variance	1.292
Kurtosis	7.162	S E Kurt	.582	Skewness	-2.333
S E Skew	.295	Range	6.000	Minimum	.000
Maximum	6.000	Sum	330.000		

Valid cases 66 Missing cases 1

VAR11 OVERALL EXPERIENCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
EXCELLENT	1	39	58.2	59.1	60.6
VERY GOOD	2	22	32.8	33.3	93.9
GOOD	3	2	3.0	3.0	97.0
FAIR	4	1	1.5	1.5	98.5
POOR	5	1	1.5	1.5	100.0
		1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.485	Std err	.097	Median	1.000
Mode	1.000	Std dev	.789	Variance	.623
Kurtosis	6.068	S E Kurt	.582	Skewness	1.988
S E Skew	.295	Range	5.000	Minimum	.000
Maximum	5.000	Sum	98.000		

Valid cases 66 Missing cases 1

VAR12 RETURN VISIT

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	65	97.0	98.5	98.5
NO	2	1	1.5	1.5	100.0
		1	1.5	Missing	
	Total	67	100.0	100.0	

Mean	1.015	Std err	.015	Median	1.000
Mode	1.000	Std dev	.123	Variance	.015
Kurtosis	66.000	S E Kurt	.582	Skewness	8.124
S E Skew	.295	Range	1.000	Minimum	1.000
Maximum	2.000	Sum	67.000		

Valid cases 66 Missing cases 1

Preceding task required .29 seconds CPU time; .48 seconds elapsed.

36 CROSSTABS TABLES = VAR02 BY VAR03/

37 STATISTICS = ALL

There are 6,578,896 bytes of memory available.

Memory allows for 32,767 cells with 2 dimensions for general CROSSTABS.

11-Jun-97 SPSS RELEASE 4.1 FOR VAX/VMS Page 1014:21:22 SPSS VAX/VMS Site on VAXA::

VAR02 SERVERS NAME by VAR03 COURTESY OF SERVER

VAR03 Page 1 of 2

Count | VAR02	VERY FRIENDLY 0	FRIENDLY 1	MEDIOCRE 2	UNFRIENDLY 3	4	Row Total
0	1					1
						1.5
1 SUE		13				13
						19.7
2 JOHN		8				8
						12.1
3 RUSSELL		14				14
						21.2
4 MINDY		2				2
						3.0
5 LAURA		6				6
						9.1
6 YVETTE		2	2			4
						6.1
7 GWEN			2			2
						3.0
8 JEN			7	1		8
						12.1
9 JULIE				1	1	2
						3.0
10 NOT SURE						6
						9.1
Column Total	1 1.5	45 68.2	11 16.7	2 3.0	1 1.5	66 100.0

11-Jun-97 SPSS RELEASE 4.1 FOR VAX/VMS Page 1114:21:23 SPSS VAX/VMS Site on VAXA::

VAR02 SERVERS NAME by VAR03 COURTESY OF SERVER

VAR03 Page 2 of 2

Count | VAR02	UNFRIENDLY 5	Row Total
0		1

	+--------+	
1		13
SUE		19.7
	+--------+	
2		8
JOHN		12.1
	+--------+	
3		14
RUSSELL		21.2
	+--------+	
4		2
MINDY		3.0
	+--------+	
5		6
LAURA		9.1
	+--------+	
6		4
YVETTE		6.1
	+--------+	
7		2
GWEN		3.0
	+--------+	
8		8
JEN		12.1
	+--------+	
9		2
JULIE		3.0
	+--------+	
10	6	6
NOT SURE		9.1
	+--------+	
Column	6	66
Total	9.1	100.0

Chi-Square	Value	DF	Significance
Pearson	238.90833	50	.00000
Likelihood Ratio	119.06131	50	.00000
Mantel-Haenszel test for linear association	44.79798	1	.00000

Minimum Expected Frequency - .015
Cells with Expected Frequency < 5 - 62 OF 66 (93.9%)

Statistic	Value	ASE1	Approximate T-value	Significance
Phi	1.90258			.00000 *1
Cramer's V	.85086			.00000 *1
Contingency Coefficient	.88518			.00000 *1

Lambda :				
symmetric		.45205	.06826	4.94691
with VAR02	dependent	.30769	.06400	4.59565
with VAR03	dependent	.80952	.08569	4.78518
Goodman & Kruskal Tau :				
with VAR02	dependent	.27531	.02503	.00000 *2
with VAR03	dependent	.85540	.04184	.00000 *2

Uncertainty Coefficient:

symmetric		.57116	.04402	8.02477	.00000 *3
with VAR02	dependent	.41997	.04539	8.02477	.00000 *3
with VAR03	dependent	.89246	.03414	8.02477	.00000 *3

Kendall's Tau-b	.75073	.04466	7.72514
Kendall's Tau-c	.59063	.07646	7.72514
Gamma	1.00000	.00000	7.72514

Somers' D :

symmetric		.72310	.04302	7.72514
with VAR02	dependent	.98893	.00697	7.72514
with VAR03	dependent	.56991	.06841	7.72514

Pearson's R	.83018	.02842	11.91302	.00000
Spearman Correlation	.82855	.04544	11.83809	.00000

Eta :

with VAR02	dependent	.90715
with VAR03	dependent	.98800

>Warning # 10390
>Kappa cannot be computed for this table because row values do not equal column
>values.

*1 Pearson chi-square probability
*2 Based on chi-square approximation
*3 Likelihood ratio chi-square probability

Relative Risk Estimate cannot be computed

Number of Missing Observations: 1

Preceding task required .19 seconds CPU time; .63 seconds elapsed.

```
  38 CROSSTABS TABLES = VAR02 BY VAR06/
  39 STATISTICS = ALL
```

There are 6,578,896 bytes of memory available.

Memory allows for 32,767 cells with 2 dimensions for general CROSSTABS.

VAR02 SERVERS NAME by VAR06 SPEED

Count | VAR06	YES	NO	Row Total
VAR02			
0	1		1
			1.5

SUE				19.7
	2	8		8
JOHN				12.1
	3	14		14
RUSSELL				21.2
	4	2		2
MINDY				3.0
	5	6		6
LAURA				9.1
	6	4		4
YVETTE				6.1
	7	2		2
GWEN				3.0
	8	8		8
JEN				12.1
	9	2		2
JULIE				3.0
	10	4	2	6
NOT SURE				9.1
Column Total	1 1.5	63 95.5	2 3.0	66 100.0

Chi-Square	Value	DF	Significance
Pearson	86.60318	20	.00000
Likelihood Ratio	20.58870	20	.42169
Mantel-Haenszel test for linear association	8.80484	1	.00300

Minimum Expected Frequency - .015
Cells with Expected Frequency < 5 - 27 OF 33 (81.8%)

Statistic	Value	ASE1	Approximate T-value	Significance
Phi	1.14550			.00000 *1
Cramer's V	.80999			.00000 *1
Contingency Coefficient	.75333			.00000 *1

Lambda :				
symmetric		.07273	.04130	1.66702
with VAR02	dependent	.05769	.03233	1.77281
with VAR06	dependent	.33333	.27217	1.00766
Goodman & Kruskal Tau :				
with VAR02	dependent	.05430	.00305	.01858 *2
with VAR06	dependent	.53927	.03691	.00000 *2
Uncertainty Coefficient :				
symmetric		.13209	.06153	1.94232 .42169 *3

with VAR06	dependent	.72940	.09916	1.94232	.42169 *3

Kendall's Tau-b		.30531	.08291	1.83641
Kendall's Tau-c		.12603	.06863	1.83641
Gamma		1.00000	.00000	1.83641
Somers' D :				
symmetric		.17664	.04797	1.83641
with VAR02	dependent	.95812	.02663	1.83641
with VAR06	dependent	.09729	.05258	1.83641

Pearson's R		.36805	.09847	3.16666 .00236
Spearman Correlation		.34980	.09448	2.98714 .00399
Eta :				
with VAR02	dependent	.37111		
with VAR06	dependent	.74384		

>Warning # 10390
>Kappa cannot be computed for this table because row values do not equal column
>values.

*1 Pearson chi-square probability
*2 Based on chi-square approximation
*3 Likelihood ratio chi-square probability

Relative Risk Estimate cannot be computed

Number of Missing Observations: 1

Preceding task required .11 seconds CPU time; .16 seconds elapsed.

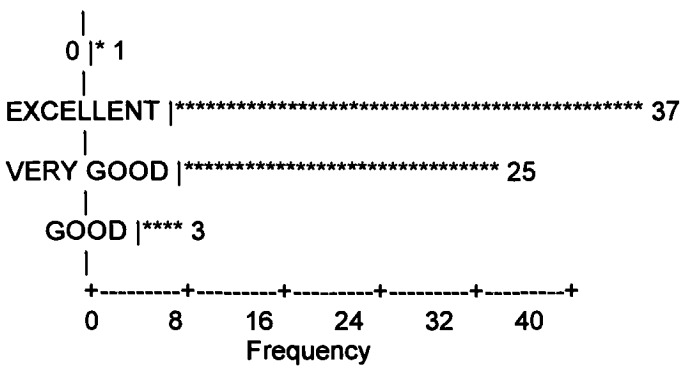
```
 40 FREQUENCIES VARIABLES = VAR05/
 41 BARCHART
```

There are 6,578,896 bytes of memory available.

Memory allows a total of 32,767 values accumulated across all variables.
There may be up to 8,192 value labels for each variable.

VAR05 FOOD QUALITY

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	0	1	1.5	1.5	1.5
EXCELLENT	1	37	55.2	56.1	57.6
VERY GOOD	2	25	37.3	37.9	95.5
GOOD	3	3	4.5	4.5	100.0
	.	1	1.5	Missing	
		67	100.0	100.0	



Valid cases 66 Missing cases 1

Preceding task required .04 seconds CPU time; .06 seconds elapsed.

42 FINISH

42 command lines read.
0 errors detected.
2 warnings issued.
1 seconds CPU time.
2 seconds elapsed time.
End of job.