Montgomery County Library Survey Project

The Creation of Surveys for the Montgomery County Library to Use in Self Evaluations

An Interactive Qualifying Project Report to be submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science

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Abstract

The Montgomery County Department of Public Libraries has, in the past, conducted annual surveys to assess its performance in several key areas. Until recently, however, budget cuts have forced the library system to cease collecting this useful feedback. This project created a system with which the libraries of Montgomery County may once again assess their customers' satisfaction. This system includes paper surveys, a structured database of questions, and a data analysis tool.

Executive Summary

The public library system in Montgomery County is consistently ranked in the top ten in the United States. Its large population, combined with the easy access to Washington D.C. via Metro trains and buses, accounts for six million visitors per year. Montgomery County has twenty-one library branches which handle nine million new material circulations a year. Despite this large demand, the Montgomery County Department of Public Libraries (MCDPL) consistently ranks among HAPLR's (Hennen's American Public Library Ratings) top ten library systems.

There are currently program measures in place that each branch of the Montgomery County government uses to evaluate its own performance. The program measures specific to the public libraries cover four different areas: Programs, Circulation, Information Services, and Information Technology. However, there are some aspects of the program measures, namely the service quality, that have not been recorded in the past few years. The main goal of this project is to create a system that can be used for acquiring customer feedback, most importantly for the program measures that need to be updated. The system includes a database of questions that can be applied to the surveys, the surveys themselves which are used for data collection, and a design for a data analysis tool including specialized input forms.

While the program measures were the highest priority, the library was still interested in understanding the public's opinion about all aspects of the library. As such, five surveys were created, each pertaining to a different aspect of the library. Four of the surveys pertained to areas covered by the program measures: Circulation Services, Information

Services, Programs Offered, and Information Technology. A Facilities survey was added which allowed customers to evaluate the general facilities.

The creation and wording of the questions for the surveys was determined based upon several factors. The first and most important factor considered was that the questions had to provide data to complete the program measures. For the other questions the team traveled to different library branches in Montgomery County to observe the daily workings of the library. Based on observations from the different branches and conversations with employees of varying rank, the other questions were drafted, with the intent of covering all possible issues with the library. In some cases the desired information could not be simplified into a multiple choice question. As such, open-ended questions were also drafted. One consideration that was kept in mind during the question creation process was the aspiration to make data entry as simple as possible. This was accomplished with the implementation of standardized answers for the multiple choice questions. Each question has one of five specific answer sets associated with it.

The intention of the project is not to collect the data, but to make the preparations so that the library can conduct the surveys. After enough questions were collected survey drafts were prepared with the purpose of being pilot tested. Before pilot testing could begin, the drafts had to be approved by several different groups within the library system. When revising the questions, the team consulted many different members of the library staff, both on the local and county levels. The drafts also had to be sent to the library staff's union, the Senior Management and Budget Specialist, John Greiner, and general library employees from the different branches. These individuals work at libraries and are knowledgeable about both the inner workings of the library itself, as well as the needs of the customer. After the

revisions were made based on their input, the team began pilot testing with the general public. The pilot testing was used to determine both how well the customers were able to understand and answer the questions, and how long it took them to complete the survey to ensure that it was not a burden. After observing and receiving feedback from the public, the last revisions were made to the surveys.

For data compilation, the team used Microsoft Access and Microsoft Excel to tabulate results. During the process of creating questions, each question was categorized and had a specific nomenclature pertaining to that specific question. This nomenclature, while originally planned to make data entry easier, is actually better suited for modifying and editing the surveys themselves. However, each survey is unique and the input form will direct the person entering the data to a form pertaining to their specific survey. This form has every question from the survey, followed by a drop-down menu containing possible answers for that question. This method is possible through the use of a Microsoft Access form. These forms allow for few errors because by simply entering the date, type of survey, and specific library branch, the data entry form for that survey will appear. The input form then takes all of the data and compiles it into an Excel spreadsheet. Excel allows for much easier data manipulation and provides more options for displaying the data compared to Access.

MCDPL was left with several deliverables with which to work. The first deliverable is the database of all the questions. This database can be used for the creation of new questions, new surveys, and possibly even the implementation of solitary questions onto the library's website. It will be essential if the MCDPL decides that they would like to pursue surveys specific to individual branches. The second main deliverable is the five surveys themselves. These surveys have been left with a specific guide as well as general

recommendations for their distribution and collection. The other deliverables are the Access forms pertaining to the surveys. These forms allow for easy data entry and compilation by the library staff. Also if this method is found to not be cost-effective, there are several alternative methods of data entry the library may want to consider.

Authorship Page

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1 Introduction

For many years the Montgomery County Library has been conducting customer survey evaluations. These evaluations provide feedback about services and also prove that the population's tax dollars are going towards good use. Like any other successful business or organization, the library must adapt to an ever changing society to be sure it succeeds in its services. The library system continuously monitors itself in the areas of service quality, program efficiency, circulation services, reference department, and other areas ad well. By assessing the quality of service provided to customers, the library has been able to ensure that the public receives what they desire from its library.

It is very important that libraries are sufficiently satisfying their customers. Although libraries are non-profit organizations and are subsidized by local governments, they need to properly satisfy the general public by continuously assessing themselves. If a library fails to meet the requirements for customer satisfaction, and the people aren't happy, the library may not receive the correct funding and may be forced to purchase more materials in order to correct the problem. However, if the library's performance meets the population's standards, funding may be increased. There are many ways in which the library can assess customer satisfaction.

Most libraries use surveys to help indicate service quality. One type of survey in particular that libraries use nationwide is known as LibQUAL. "LibQUAL+(TM) is a suite of services that libraries use to solicit, track, understand, and act upon users' opinions of service quality (Welcome to LibQUAL, 2006). However, LibQUAL is a very large and lengthy survey and it inquires about areas of a library system that

Montgomery County library system is not interested in at this time. Therefore, it was not practical to use LibQUAL for our project.

The library does, in fact, have a set of questions known as "program measures" that is already uses to evaluate itself. However, the Montgomery County Library has had difficulty measuring its progress and evaluating its performance. Due to recent funding and a desire to know its customer service status, the library has decided that now is the time to update its evaluation program, specifically in the areas of facility condition, material circulation, information services, offered programs, and Internet technology. According to the library, this evaluation should take the form of five customer satisfaction surveys, with one survey corresponding to each of the specific areas in question. The library is undecided about the best format and structure in the design, administration, and analysis of these surveys. It has elected to challenge a team of WPI undergraduate students with the task of creating these surveys and engineering a way in which to best analyze the results.

This project's target objective is to assist the Montgomery County Library in assessing the services it provides to its customers by creating surveys to gauge the public's satisfaction with the library. It will also provide a means to analyze the statistical data collected in the surveys so as to clearly define what the customers of the library desire. The intention of our research in the next section is to understand the details of the survey process and to decide which surveying type is the best method of self evaluation that the library should pursue. We will also research other means of gathering customers' opinions, such as focus groups and video interviews.

2 Background

The background section of this proposal is dedicated to introducing the reader to the basic ideas that surround this project. This section will discuss different survey types and design methods. Throughout the section, the reader will discover that our team has investigated service quality interpretation techniques that can be implemented by the Montgomery County Library in order to gain insight into the effectiveness of the current services that it provides to its customers. The section will discuss what other libraries have done in order to improve themselves and will look at current issues that public libraries face to determine where most are inadequate.

One way in which to analyze the problems vexing the Montgomery County Public Library and its subsidiaries is to use sample surveys. When properly constructed and administered, these surveys will provide the library system with representative feedback from its customers. They will be utilized in conjunction with a data analysis tool that we created, in order to give the Montgomery County Library insight into how it is thought of throughout Montgomery County by its customers.

2.1 Montgomery County Library System

The Montgomery County Library system consists of twenty-one branches spread across all of Montgomery County, with its main branch in Rockville, Maryland. Serving over half a million customers, the library does an excellent job of consistently being ranked among the top ten libraries in the nations by Hennen's American Public Library Ratings (HAPLR).

Recent loss of funding has caused the library to slow down some of its evaluation procedures so as to allow other areas of the system to continue to function normally. Because of this process, the library has lost touch with its ability to assess customer satisfaction in some of its areas. Thankfully, staffing levels within the library have increased and allowed for our team to work to develop new customer satisfaction evaluation tools and a way in which to analyze them.

2.2 Common Issues for Public Libraries

In 1876, there were enough public libraries in the United States to form the American Library Association (ALA), with the mission "to provide leadership for the development, promotion, and improvement of library and information sciences and the profession of librarianship in order to enhance learning and ensure access to information to all" (American Library Association, 2006). One hundred thirty years later that mission is still viable, but there are new obstacles arising everyday. With the coming of the Information Age, libraries have seen a large decline in both customers and funding.

2.2.1 Circulation Services

The reduced funding is causing libraries everywhere to cut their own costs in whatever ways possible. A consortium of Ohio academic libraries called OhioLINK ran a cost analysis project to try to determine ways to save money in the face of decreased funding. One of the first services that they examined was the Interlibrary Loan (ILL) service. They found that the current ILL transfers were costing them around thirty dollars per transaction. OhioLINK implemented several different measures to lower costs, the first being an increase in the time for an ILL transaction. The wait time was

increased to 2-3 days which allowed more books to be transferred at once while still keeping the wait time relatively low. With new request technology, the libraries were able to replace some staff with low-cost student workers. While these were only two of the changes made, the OhioLINK libraries were able to drop transfer costs down to around $1.00 per transaction. These revisions are reliant on the amount of ILL transactions; therefore if the customers don't make use of the ILL service the library will be unable to reap the benefits of these techniques. (Kohl, 2006)

In 2001, Texas A&M University conducted a series of focus groups to gain feedback from its students about the library (Ho and Crowley, 2003). Each focus group lasted roughly two hours with a moderator asking the participants open-ended questions. The advantage of focus groups lies in identifying problems; the open-ended questions incite the participants to relate their own specific experiences and inform the moderator exactly what the problem is. Since the library had already identified circulation as a problem area, the focus group allowed them to focus on the actual issue. The library found that most of its circulation problems were due to poor communication between students and employees. The positive feedback was very sparse, but they did find that students were pleased with the ability to renew materials online.

2.2.2 Offered Programs

In April of 2001, 925 institutions, including public libraries, museums, public television stations, and public radio stations, were surveyed. The purpose of the survey was to determine what, if any, collaboration occurred between these institutions. The results found that public libraries' involvement in collaborations was highly dependent on the size of the library (Rodger, 2005). These collaborations are often some of the best

programs libraries can offer. Many libraries receive support by running local TV or radio stations out of their buildings. In his 2001 article "The deserted library" [sic], Scott Carlson describes how many libraries are attracting users back with specialized programs. These programs include, but are not limited to: tutoring and writing centers, art displays, and author readings (Carlson, 2001). An art display is a perfect example of one way a library could collaborate with a museum in the area. Specialized programs aimed at a target audience are great ways to get customers interested in the library again.

Carlson also mentions a change that many libraries have already found to be an excellent factor in improving their customers' opinions. The universal rules of libraries used to consist of being very quiet and prohibiting food or drink. Now, cafés are showing up in libraries across the country. Why should the library worry about people bringing food and drink into the library since the same people can just borrow the book and take it somewhere food and drink are allowed? Some restrictions are still in place, such as where to allow users to eat and drink and what type of food and drink should be served: "…worked out a menu that would avoid crumbly foods or dark food dyes, which could stain the furniture" (Carlson, 2001). Being able to eat and drink in a library is something that customers have been seeking for a long time.

2.2.3 State of Facilities

According to Kathleen Collins and Robin Veal, many college students suffer from a disorder called "library anxiety". Library anxiety is a form of anxiety that is site-specific, meaning those suffering will feel anxious at the library but not in other areas. These college students will often feel intimidated by the size of their library and incompetent in utilizing the services provided by the library. They are usually too

embarrassed to ask a librarian for help when researching (Collins and Veal, 2003). These students would much rather conduct what research they can from the comfort of their own homes where they will not be affected by the anxiety.

Many libraries are aware of this trepidation customers feel towards their buildings and have already or plan to renovate their facilities. In May of 2004, Seattle's Central Library opened its doors to the public. The new building cost $165.5 million but as of August 2005, it has already generated $16 million in new economic activity, an investment by the state that will surely pay off. Most of the revenue generated so far comes from the café and private organizations holding functions in the library. In twenty years, the library is expected to have generated $320 million in economic activity. The new building wasn't built just to stimulate economic growth. The reading room especially, has a welcoming touch that will help to make anxious customers feel comfortable: "One can enjoy coffee with a friend, flip through a recent issue of *GQ*, review a stack of mystery novels or DVDs, or just stare into space" (Kenney, 2005).

In Hennepin County Pennsylvania, the Brookdale Public Library underwent some large renovations. While not nearly as large as the undertaking in Seattle, the changes were still noteworthy. The Brookdale branch assessed the needs of its community in order to find out if there was a trend in high-interest areas. As it turned out, there were only several topics (twenty at most) in which the customers were interested. "That revelation led to a bold move: the library simplified its collection, stripping it by 50 percent and focusing solely on the areas identified by the community" (Dempsey, 2005). The library reported that not only are customers more energized and active, but the staff

is as well. These drastic renovations might be the necessary course of action to once again get customers interested in libraries.

2.2.4 Information Services

According to Dempsey, what modern libraries should strive for is not to teach users how to use the Dewey Decimal System. Rather, books should be organized by topic, similar to a bookstore: "Librarians can continue to use the system [Dewey Decimal] to organize their materials, but they shouldn't expect their customers to use it or understand it" (Dempsey, 2005). This removal of language that the customer cannot understand will help to make them feel more comfortable at a library.

Back at Texas A&M, the problem is not incomprehensible jargon; instead students were complaining about the service that they received from the Information Desk: "My experience is sometimes the book is there, but sometimes it's not, so then I fill in a search request, and sometimes they don't find it" (Ho and Crowley, 2003). Many students felt cheated because the library catalog (or LibCat as they refer to it) will tell them that the library has a book that it does not actually have. A strong suggestion was made to update the LibCat system. This type of problem drove students away from the library because they felt that it was unreliable.

2.3 Sample Surveys

One way in which to analyze the needs of the library's customers, while at the same time keeping the goals of the Library in mind, is through surveys. These surveys will allow for a collection of data specific to the problems that the library faces. Upon successfully administering the surveys, statistical analysis may be required. With that in

mind, the team created a data analysis tool that can easily be used by the library to clearly interpret the results of the surveys.

Surveys are implemented in many different places and in many different ways. Scientists use surveys to collect data in order to support their theories. Governments use polls in order to select its officials. They are also used in the marketing world to help analyze how a good or service can be improved. Questioning a specific population about a specific topic is one of the most efficient and popular way of gathering useful information.

But how can the library be sure it surveys every customer it serves? The answer is it does not need to. If designed and implemented correctly, a sample survey can be used to survey a small fraction of the population, while still representing the needs of the entire population. The following sections were designed to explain exactly how the team will create these surveys.

2.3.1 Proper Survey Selection

After deciding that surveys could be used to determine customer satisfaction, we researched exactly what a survey is and the different types that could be created. We learned that there is a lot of research and planning involved when correctly designing a survey. Poor or incorrect design may not only produce skewed results, but the results may be completely useless.

The survey world is quite a large one. Not only is surveying used in almost every field of research, there are many types of surveys to consider. So how do we choose the right one for our project? Every survey type has its advantages and disadvantages, depending on the purpose for the survey, the time frame, and the demographic to be

analyzed. We took a look at all of the survey options before deciding which survey type to develop.

2.3.1.1 Online Surveys

An online survey can be quite useful in order to gather information quickly and inexpensively. This survey could be placed on the internet, possibly on the library's web page, and would allow the respondent to take the survey from the comfort of his or her own home. It is recommended, however, that there be a password or PIN in order to access the survey. By having such a system, the surveyor has a better control of who takes the survey. An initial contact via mail or telephone is necessary to give the respondent their password or PIN.

One advantage of this type of survey is that it is very inexpensive to create and maintain. The number of people surveyed and size of survey area also have no effect on cost. If designed correctly, after the survey is completed by the respondent, all the data can be automatically recorded, making it easier to analyze. However, the entire population needing to be surveyed may not have access to the internet. These surveys also need to be relatively short, compared to other survey types, and have a low response rates.

2.3.1.2 Mail Surveys

Mail surveys are another possible approach to collecting large amounts of data. The surveyor will mail the survey to the selected demographic with detailed instructions such as who is to take the survey and when it is to be retuned. After the survey is

completed by the respondent, within the time requested by the surveyor, it is mailed back for analysis.

Mail surveys are another survey type that is relatively inexpensive. The survey length can also be longer than in other surveys because the respondent can have many days to complete it. The length of time from when the surveys are mailed to the time they are returned is not affected by the size of the population surveyed. Also, because the respondent and the surveyor never meet, more honest results tend to be submitted. However, although the survey can be addressed to an individual, it doesn't mean it will be filled out by that individual. Having a person outside of the demographic fill out the survey could disturb the results. The response rate is generally low with this type of survey because it requires the most effort from the respondent. Because these surveys are generally longer, many people will skip questions, or fail to fill out the survey at all.

2.3.1.3 In-Person Surveys

A third type of survey is one that is handed out to the public in person and filled out immediately. This survey is known as a personal interview survey. Generally, this survey is the most expensive because it requires the surveyor to go to the respondent for the survey. However, the respondents will be coming to us in this project so the cost will be minimized.

A survey administered in this fashion can be quite useful in gathering data quickly and efficiently. It allows "in-person" contact with the surveyor and the individual being surveyed. The surveyor has one hundred percent control in ensuring the desired population is the only population surveyed and is also present to address any issues the respondent may have about the survey. One disadvantage, however, is that the

respondent may answer questions based on what he or she thinks the surveyor wants. With the surveyor present, the respondent may feel an unintended pressure to answer a certain way.

2.3.2 Survey Phases

There are many different phases from creation to completion of a survey. These "stages" are well defined by Czaja and Blair. "1. Survey design and preliminary planning. 2. Pilot testing. 3. Final survey design and planning. 4. Data collection. 5. Data coding, data-file construction, analysis, and final report." (Czaja and Blair, 2005). Czaja and Blair did a great job of defining the different stages and giving a great description of the stages.

2.3.2.1 Survey Design and Preliminary Planning

Before beginning to create a survey, a few decisions must be made. We must decide who, exactly from the libraries customers, to survey. Targeting a select population will allow us to control a variable in the analysis process that we would not be able to control if we simply hand out the survey to anyone. It will also ensure the results of the survey are not skewed. Selecting which population to survey is a crucial step. The team also needs to decide on the specific questions the survey will ask. These questions will be developed through dissecting the four areas that the Montgomery County Library needs service quality information about. Once these decisions are made the team can begin to design the survey.

2.3.2.2 Pilot Testing

After the surveys are designed and all appropriate questions are addressed, they needs to be pilot tested. Pilot testing a survey is very important for several reasons; first, the surveyor can get an idea of how long it will take an individual to complete a survey. Knowing this will help the surveyor decide, based on the allotted time to research, how many people the survey can be administered to. Second, the surveyor can ensure that the questions can be understood by those taking the survey. This allows for changes to be made before initial data is collected. It may also be a good idea, during the pilot testing phase, to have a short discussion with the individual after the survey is taken, to get an idea of how the survey went.

2.3.2.3 Final Survey Design and Planning

As the pilot testing phase nears completion, the team can quickly review the results to be sure all the questions are being addressed. It is also a good idea to have someone available to answer any questions the respondents may have. Based on the questions asked, changes to the survey can be made. By using the information gathered during the pilot testing phase, the team can adjust the survey as needed to ensure the survey will answer the main question that was decided on. After the surveys are prepared for the final time, the team will submit them to the library for use.

2.3.2.4 Data Collection and Data Coding, Data-File Construction, Analysis, and Final Report

This phase will not be completed by the WPI team, but rather by the library. The library can issue the surveys and use the data analysis tool to interpret the results. These

results will help the library learn about the needs and desires of its customers. It is recommended that the library begins looking at the results even before all the completed surveys are collected. By reviewing data as it comes in, the library may already be able to see a pattern in the responses and predict the results of the survey upon completion. The final step in the survey process is when the library takes a look at all of the data collected and begins making final conclusions. The data analysis tool will create graphs and charts to provide a useful way of getting a visual interpretation of the data.

2.4 Effective Survey Design

In creating a survey for the Montgomery County Library, we need to ensure that our final product is able to collect substantial and accurate information from the target population. To accomplish this, the questions of the survey must be effectively written and employed to representatively assess the target population.

2.4.1 Design Approaches

Arlene Fink describes two different main types of survey designs. One is experimental design and the other is descriptive, or observational, design (Fink, 1995). In an experimental design, two groups are created. One is the population of interest, and the other is a control. The two groups are given the same survey and the differences between the two groups' responses give insight to the problem in question. As this relates to the Montgomery County Library and its desire to survey its customers, two population groups could be formed and surveyed based on library visit frequency. One group would be formed of customers who had checked out books on several occasions in a specified time frame and the other group would be formed of customers who very

rarely checked out books in this time frame. An experimental survey could then be given to each of the groups. The results would hopefully shine light on the reasons behind the difference in library frequency.

On the other hand, a descriptive design might be found to be more useful. In this design, no distinct groups are created but rather the target population is directly surveyed with questions aimed to glean information of interest from the various subjects. The descriptive design could also be made to apply to the Montgomery County Library problem. Every customer of each library branch could be given a single survey with questions addressing their satisfaction and expectations of the library system. Both the experimental and descriptive design types can also be administered multiple times over a length of time in order to track trends in library satisfaction (Fink, 1995). These trends could be the result of positive or negative changes in the services offered at the library.

2.4.2 Survey Distribution

Once the basic design approach of the survey is decided on, a proper method of distributing the survey to the target population must be settled on. It is important that the surveys reach each of the members of the target population, but also that none of the members of the population are overrepresented. Without proper planning in this area, problems can easily arise. These types of problems can be defined as either clustering or duplication.

Clustering describes the problem that arises when a single survey represents more than one member of the target population (Groves et al., 2004). For example, if a household is surveyed by phone, the single survey of that single phone number may be overlooking that multiple library customers who live in that household. Duplication is

when a single member of the target population is represented more than once in the course of the surveying process (Groves et al., 2004). This might happen if surveys are being handed out at each of the branches of the Montgomery County Library and a single customer visits more than one branch and fills out a survey more than once.

Obviously, clustering and duplication can vastly skew survey results, with members of a population holding different weights in the results. There is a multitude of possible situations where these errors can occur and, as such, these possible situations were studied in order to plan a solution into the implementation of the survey for the Montgomery County Library.

2.4.3 Proper Question Design

Even if the general survey design and implementation method are a perfect match to the Montgomery County Library problem, the survey will be meaningless unless the right questions are asked. It is important to ensure that appropriate wording be used, that the meaning of a question cannot be interpreted differently among the respondents, and that respondents are focused into answering any open-ended questions in a standardized fashion. Questions in a survey must be complete and totally understandable on their own. If a survey taker must fill in his or her own words or definitions to complete and understand a question, the survey will not produce accurate results (Fowler, 1988). For example, a question "How many times in the last month have you used the library?" is ambiguous. It is left up to the respondent to interpret the meaning of the word "use" and the definition of "last month." A better question would be, "How many books have you checked out of the library in the past 30 days?" Using methods of complete and clear questions pointed at answering the concerns of the Montgomery County Library system,

a successful survey will be compiled for use by the library system in its research of customers' concerns and desires.

2.5 Data Analysis Tool

Excel is the most popular spreadsheet program today because of its ease of use and flexible application. A spreadsheet consists of a series of columns and rows referred to as cells. Each cell is a place to store one piece of data, usually a number. Each column and row of data can be labeled within the Excel program. Once all the data is collected and stored within Excel, the program can automatically interpret the data by calculating the equations the user inputs. The data can also be easily transferred into graphs and charts used for visual analysis.

Microsoft Access is a similar program in that data can be inputted and then analyzed. However, rather than a spreadsheet program, Access is a database program. The questions can be placed in a series of "sub-groups" which can allow for easy organization. Access is very good at creating forms, an application that will be used by the Montgomery Library when inputting data. When using the form, the library will simply input the data, rather than manipulate the formulas and calculations that we create.

2.6 Sample Size

One of the most important tasks the group has is to determine the minimum sample size necessary to provide valid results to the Montgomery County Library. In determining the proper sample size for the survey, a few factors need to be decided upon. Cochran's formulas for sample size rely on the type of data to be collected, the margin of error, and the alpha level (Cochran, 1977). Margin of error is the percent error that the

researcher is willing to accept in the study. Alpha level is the level of risk that the researcher is willing to take that the true error exceeds this accepted margin of error (Bartlett et al., 2001).

Establishing the type of data to be collected is the first step in deciding upon a proper formula for determining the minimum sample size of the survey. There exist four main types of measurement scales for data, falling into categories of either categorical or continuous data (Cho, 1997).

The ratio scale is a measurement scale that uses scores that proportionately represent something. This means that the difference between a score of two and three is the same magnitude as the difference between a score of three and four and so on. Ratio scales also have absolute zero points meaning that scores can be compared proportionately to one another. For example, it would be accurate to say that a score of four is two times the magnitude of a score of two using a ratio scale. The ratio scale of measurement produces continuous data.

The interval scale of measurement is very similar to the ratio scale in that it uses scores that follow a consistent magnitude over every interval of the scale. A score of two and three has the same magnitude difference as the difference between a score of three and four and so on. The difference between the ratio scale and the interval scale is that the interval scale does not have a specific zero point. The interval scale of measurement produces a continuous type of data.

A nominal scale is one that does not use quantitative scores to assess criteria. Instead it uses qualitative variables such as race, sex, religion, or various personal

preferences. This scale does not produce numbers as data but rather names, hence the title. This scale of measurement produces a categorical data type.

Finally, ordinal scales use scores to represent something. However, unlike ratio and interval scales, this method of measurement does not proportionately represent the item of interest based upon these scores (Lane, 2006). For example, a score of three simply conveys a magnitude greater than two but nothing more. Ordinal scales of measurement produce categorical data.

The next step in determining the sample size for this project is to estimate the margin of error and alpha level. Generally, the acceptable margin of error for categorical data types is five percent and the acceptable margin of error for continuous data is three percent. The acceptable margin of error for categorical data is larger than that for continuous data because categorical data is, by nature, qualitative (Bartlett et al., 2001). For example it is more difficult to accurately report an average citizen's stance on gun control than to accurately report an average citizen's age. A larger sample would be required for the former and the margin of error is expected to be higher than that of the latter. Most educational research studies use an alpha value of either 0.05 or 0.01 depending on the weight of the results. An alpha level of 0.01 is often used in cases where the results of the research bear the weight of important decisions and changes. Alpha levels larger than these may be used in situations where researchers simply wish to view general trends or gain insight into possible further studies (Bartlett et al., 2001).

2.7 Focus Groups

Although Montgomery County would like us to create and conduct surveys, we did examine focus groups as an alternative method to surveying. Focus groups have very

distinctive pros and cons that must be evaluated before the method should be used. Focus groups allow users to relate personal experiences so that specific issues come to light. Also, because there is a group of people, it is much easier to identify a recurring problem. Someone may forget about an incident when filling out a survey, but usually people will remember if someone else is relating a similar experience (Ho and Crowley, 2003). There are several downsides as well. Focus groups require time and many people may not be willing to spend a few hours discussing libraries. To help create interest an incentive is often offered. The problem with incentives is that it may draw volunteers who are only interested in the incentive, and will therefore skew the data by representing a demographic that is highly interested in the incentive. Another issue is that focus groups require a moderator. A moderator needs to remain completely impartial so as not to cause the subjects to modify their answers to what they think he wants to hear. However, if one selects a moderator that has experience but lacks knowledge of the subject, "he or she may have a good rapport with the group but not be aware of the points that need to be pursued or clarified" (Von Seggern and Young, 2003). The focus group method is a viable way to gather information, but due to time constraints and other complications, focus groups may not be suitable for this project.

2.8 Video interview

One possible outcome from the project would be video interviews. These videos will only be made if there is enough time left at the end of the project. These interviews will be used as a means for customers to reveal their personal stories about how the Montgomery County Library System has helped them. The library could then show these videos to demonstrate how it has helped customers.

The first step involved with this assignment would be advertising to the customers that the library is looking for participants. This would most likely be done through several different mediums. There would be some type of advertisement on the library's website. There would also be physical advertisements in the library, possibly in the form of flyers or a large sign posted somewhere central within the library.

Once the advertising campaign has begun, interested parties would need some avenue to express their interest. Most likely, the customers would have to submit some written copy of their story. This process ensures that the story is appropriate and of a high caliber. A written copy would also help to decide which customers to interview. The responsibility of deciding which stories would be told lies with the Montgomery County Library System.

2.9 Case Study

In 2003, the Waterford Institute of Technology (WIT) library service did an evaluation of itself in a very similar way to which our team will be conducting our surveys. Ten years prior to its evaluation, WIT library services went through many changes within itself, to include a new building at both its main campus and its smaller campus. This is very similar to the Montgomery County Library system in that it has multiple branches and has recently gone through some changes. However, it is different because the WIT libraries are on a college campus, where as the Montgomery County Libraries are public libraries. This is a major difference due to the customers that use each library; one set of customers being undergraduates, graduates, and academic staff, and the other set ranging from children to adults of the general population.

Rather than selecting one of the survey types previously mentioned, the WIT team decided to combine all three surveys types (online, mail-in, in-person). They decided that although a web based survey would sufficiently reach the academic staff, it would not reach the undergraduates to the desired degree because they believed undergraduates would not check their email accounts regularly. They decided to hand out the surveys in the undergraduates' classes and allow them to return them within four weeks. This was an excellent idea for an on-campus survey; however this system is inadequate for this project. It is unknown how many customers have access to the web and there are not classes to hand the surveys out to. However, by giving the surveys to the customers to complete in the comfort of their own home, and allowing four weeks to return them, the WIT team received a sixty-five percent response rate. Our team could emulate this process by giving the surveys to the customers as they leave the libraries, along with a self addressed envelope, and allow a designated time for the surveys to be returned.

Very similar to the Montgomery County Libraries, the WIT libraries were interested in specific areas within the library to be analyzed. However, rather than creating a survey for each of the areas that are in question, the team decided to create one larger survey with sections dedicated to those areas. This allowed the respondents to skip the sections not relevant to them, while at the same time allowing for all the appropriate sections to be answered, making each survey tailored to each individual. They also had a free text section at the end, intended for the respondent to write in any questions or suggestions they might have. Interestingly enough, over fifty percent of the respondents wrote in a comment.

2.10 Conclusion

It is clear that creating a survey or surveys for this project will not be small task, and that surveys are not the only method of evaluating customer satisfaction. There are many considerations that must be taken in order to produce an acceptable outcome. Upon completion of this project, our team will have:

- Created surveys that will assist the Montgomery County library in assessing itself
- Created a data analysis tool that will be easy to use by the Library while at the same time providing valuable visual and graphical representations of the data
- Recommended a survey technique that can be used by the Library in administering and collecting the surveys.
- Time permitting, created a video compilation of interviews of customers

3 Methodology

This project's target objective was to assist the Montgomery County Library in assessing the services it provides to its customers by creating surveys to gauge the public's satisfaction with the library. We produced a useful survey tool as well as a data analysis tool that can be used in conjunction with each other by the library for many years to come. The team has created a series of objectives that were followed to ensure that we were successful in creating this survey plan. Our goals for the project were to:

- Create surveys in five distinct areas of interest
- Pilot test surveys with customers.
- Develop data analysis tool for easy data compilation and analysis

The surveys were created by using questions from the database containing all the possible survey questions. The surveys pertained to the areas of circulation desk and material distribution, offered programs, state of facilities, information services, and information technology. Upon completion, the team traveled to various library branches within Montgomery County in order to observe customer interaction as well as pilot test the surveys. This ensured that our surveys were easily comprehended and also highlighted any weaknesses or areas in need of improvement that our survey may have had. Finally, a data compilation and analysis tool was created using Microsoft Access and Microsoft Excel so that the survey results could be easily logged and analyzed by the library system. This tool was created in a fashion that would allow the library to "quick reference" the data that is collected in the surveys. The methodology section of our proposal was used as a guiding light throughout our research and development in

Montgomery County. On the following page is a flow chart that can give a visual representation of our goals throughout this project.

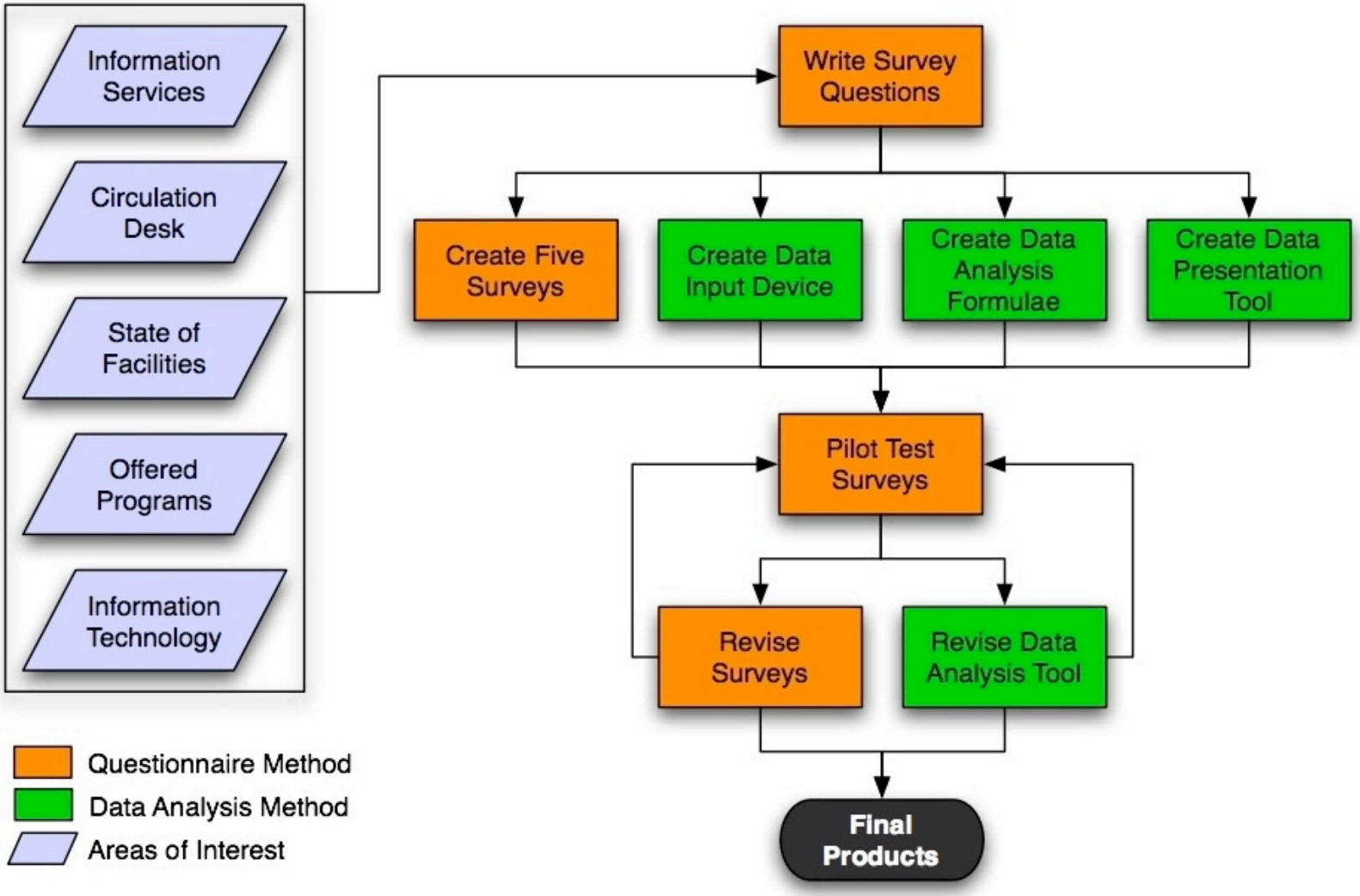


Figure 1 - Methodology Flowchart

Researching survey writing techniques and distribution/collection techniques, as well as creating this proposal, were the major accomplishments throughout the first term (PQP). The second term (IQP) was dedicated to working in Washington D.C. creating the surveys and data analysis tools, as well as pilot testing the surveys. Below is a timeline of work, Week 1 being the week of October 23 2006:

Objectives	Prep	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Survey Writing Techniques	■							
Distribution/Collection Techniques	■							
Data Analysis Tool			■	■	■	■	■	
Survey Creation		■	■	■	■	■	■	
Pilot Test Surveys					■	■	■	
Video Interviews								
Final Report and Presentation						■	■	■

Figure 2 - Project Timeline

3.1 Survey Design and Creation

After conferences with Eric Carzon and Lennadene Bailey, the team decided on creating five short surveys each focusing on one of the areas in which the county library system is most concerned. These areas consist of:

- Circulation Desk and Material Distribution
- Programs
- State of Facilities
- Information Services
- Information Technology

We aimed to make these surveys short, in the range of thirty to ninety seconds each. Our reasoning is that customers will not be as willing to fill out long surveys and may not spend enough time to honestly answer each question. With five separate surveys, a customer only has to spend a short time on one survey, yet the library will accumulate a number of results in each of the surveyed areas. The fact that more people are willing to fill out a short survey than a long one will make up for the fact that a single customer will only be surveyed on one or two areas of interest in a visit.

When the team arrived in Washington D.C. and began work with the Montgomery County Library, specific survey questions were formulated and organized into the library's areas of interest. Two versions were created: one version consisted of the five separate surveys for the five distinct areas and the other version consisted of a single survey that combined the sections. Both of these options were pilot tested in order to gauge the public's response. The results of these pilot tests allowed us to determine

whether to choose combined or separate surveys. We considered the possibility that different length surveys could be used to analyze different areas of interest. For example, a customer at the circulation desk may want to fill out as quick a survey as possible and get on his or her way. But, a customer who is assessing the general state of facilities at the library could be handed a survey as he enters to take with him, fill out at his leisure, and hand in before leaving the library. This customer may not mind filling out a longer survey because he perceives it as taking up less of his time.

The exact length of time an average survey takes to fill out was determined via the pilot testing step in our project. However, when writing the surveys in each of the core areas, we focused on writing a concise survey containing five multiple choice and three open-ended questions.

Our first step in creating these surveys was to brainstorm a list of questions relating to each of the areas of interest. The team held frequent meetings with the project liaisons to ensure that the questions being added to the list were both worded to their satisfaction and relevant to their areas of interest. The question brainstorming was inspired by a series of library visits and discussions with library staff.

The team first traveled to the Gaithersburg to act as customers and observe the workings of a Montgomery County library branch. Soon after, we traveled to witness programs at other active libraries. Both a children's program and an adult program were observed. These visits, along with discussions with the library staff who ran the programs, led the team to formulate some concerns that otherwise would have gone unaddressed.

The next step in this brainstorming process was to observe customer interactions at both the circulation desk and the information desk. The team spent an afternoon at the Quince Orchard Public Library and spoke with the library staff at these locations in order to gain insight as to any common concerns that many customers displayed in their interactions with library staff at the information and circulation desks. Finally, the questions that were written for each of the five surveys were emailed to library staff across all the county libraries. The feedback that we received from this process led to a few changes in the final wording and format of the survey questions.

The team held frequent meetings with Eric Carzon, Lennadene Bailey, and John Greiner to ensure that the content, wording, and format of the survey questions were all appropriate for use by the library system. These meeting were extremely productive in the creation of a final survey product, providing an environment for simple concerns on a question's wording to expand into an idea for a new question of interest. These regular meetings guided the progress of question design and survey formatting.

It was decided at the first of these meetings that a nomenclature would be made to organize all of the survey questions. The purpose of this nomenclature would be to provide a method for categorizing and sorting all of the questions in the database. The importance of such an application is to allow the library to use the database of questions to create future survey assessments. This nomenclature would consist of a category abbreviation for each dimension of design for each question. For example, a very simple nomenclature could consist of the general area of interest of the questions and the number of the question on the survey. The third question on the "facilities" survey, for example, would have the representation of "F.3" in this simple nomenclature; the "F" is the

abbreviation for “facilities” and the “3” signifies that it is the third question. The nomenclature used in this project is much more in depth. We created a nomenclature that addresses several dimensions that are useful for filtering and organizing the questions. These dimensions include the survey type, the importance of the question, whether the question is a defined program measure, the design format of the question, a specific number for the question, and a version number.

The next step after the specific questions and the nomenclature were created was to plan the format of the actual survey questionnaires. The team first decided how many questions, both multiple-choice and open-ended, should be on each survey. The goal was to create a survey in each area that would take no longer than about a minute for the average customer to fill out. This survey length would have been revised if deemed necessary after pilot testing. The goal of creating a good format is to encourage the greatest number of people to fill out the greatest number of questions as possible.

3.2 Pilot Testing

When creating the surveys, one of the most important steps was pilot testing. The pilot tests helped us to refine our surveys to make sure that they were as effective as possible. There are twenty-one different branches in the Montgomery County Library System and the problems facing the system are not uniform throughout these branches.

Before we pilot tested with the public, we had to first send out our surveys to other branches to allow staff there to review our surveys. Since they deal with library customers on a daily basis, they had the best understanding of the customers’ needs. Also, since it was not our goal to evaluate the staff, they let us know if they felt that any

of the questions could cause those who read the results of the surveys to draw conclusions about the staff. Any such questions were modified before we began pilot testing on the public.

Once the surveys had received approval from all of the necessary groups of people (the liaisons, the unions, the executives), we personally conducted the pilot testing. Our first set of pilot testing occurred in the Gaithersburg branch. Upon our arrival, we informed those in charge of our plans and began to prepare. We moved a table into the lobby where we would hand out the circulation and facilities surveys. This table was also the location where all surveys would be submitted. Next, we each handled distribution for a different survey, thereby covering three of the five. There was no program running that day so only one area had to be covered by librarians. Since there are no librarians who are always present in the areas of distribution for the facilities or IT surveys, that left us with circulation and information. Since the circulation desk tends to get busier, we decided to have the Information desk hand out the information surveys, and one member of the team handled circulation survey distribution. The circulation surveys and the facilities surveys were both distributed from the table in the lobby. As a customer was leaving, if they had taken out materials they were asked to fill out a circulation survey. If they hadn't taken out any materials, they were asked to complete a facilities survey. In this way, we made sure not to overburden a customer with too many surveys. The Information Technology survey was handed out to customers while they were using computers. The Information Services survey was handed to a customer at the Information desk after they had gotten the information they had asked about.

The next branch we pilot tested was the Bethesda branch. This time, we made several small modifications to the surveys based on what we had observed at Gaithersburg. We moved the date and branch to the top of the survey so the customers would know that the survey specifically pertained to that branch and day. We also added arrows to the bottoms of the front pages to let the customer know that there was a back side to complete. Another change was that we told the information desk not to let the customers take the survey at the desk (at Gaithersburg, the customers were taking the surveys directly in front of the librarians and we believe that this process might have skewed the results). Other than those changes, the procedure at Bethesda was almost identical to the procedure used at Gaithersburg.

Although we did pilot test at Rockville, the experience isn't really worth mentioning. Rockville pilot testing occurred for a much shorter period of time and the library wasn't very busy; as such, we received very few responses. There were also no notable observations about procedure, content, etc.

Our purpose for being present during the pilot testing phase was three-fold. First, we wanted to observe the time it takes to fill out the surveys, to make sure it didn't take too much time out of someone's day. Second, we wanted to be present to answer any questions that the customers may have had regarding the content or layout of the surveys. This allowed us to edit them, when the same problem arose often. Third, we also made observations about the distribution and collection processes of the surveys. The goal of any survey is to acquire the desired information with as little hassle to the customer as possible.

3.3 Data Analysis Tool

Our data analysis tool was designed so that the library does not need to calculate any of the data manually. The library's responsibility is to input the data into the interface, using the form that we created. The user simply selects from a series of options that the form offers using a drop down menu. The program then automatically takes the inputted data and sends them to the results section of the tool. The results are then interpreted in a fashion that is of the desires of the library.

In creating the data analysis tool, our team used two programs, both created by Microsoft and both with different advantages. Microsoft Office Excel and Microsoft Office Access are two very popular programs used all over the information world to organize and analyze data. The two programs are used by a variety of people ranging from students to businesses. Both programs are very powerful and versatile.

These two programs were used in conjunction with each other in a way that is very simple to manipulate and extremely valuable to have. We needed a lot of instruction from Lennadene Bailey in order to understand the programs. Speaking with her was the first step in creating our tool. We then needed to discuss with Eric Carzon and Lennadene what exactly this tool would need to do. We then first designed it on paper and then began creating it with Lennadene.

The tool was broken into two distinct parts: an easy to use interface that is used for data input and a results portion that displays not only numbers, but also charts and graphs. Hidden within the program are the questions and possible responses. We assigned a very intricate nomenclature system to all of the questions to allow the library

to manipulate them easily and for easy identification. This nomenclature system will be very important for future use, allowing the library to select different question types easily.

The data analysis tool will automatically updates each answer as each survey result is entered and calculates a current average for each of the five possible results. The library then has the option of using this information to better understand what needs most attention and what specifically needs improvements.

3.4 Summary

In order to properly assist the Montgomery County Library in assessing the services it provides to its customers we had a large workload. The timeline provided served as a tenuous guide for keeping our team on task and ensuring all objectives were met. The longest phase of this project was by far the survey creation, however, creating the data analysis tool and input form was no small task that required much help from our liaisons. We had made three drafts of questions before they were ever even sent out to the library staff for feedback. The pilot testing ensured that the surveys contained useful and easy to understand questions, while at the same time, it also helped us to determine the best length for the surveys. The Montgomery County Library now has five useful surveys and a tool in which to help analyze these surveys so that it can use to better understand the needs of its customers.

4 Results and Analysis

In order to successfully achieve our mission of assisting the Montgomery County Library in assessing the services it provides to its customers, we had to develop objectives that clearly defined our goals. The following four objectives are what we used as a road map to guide us throughout the project:

- Wrote surveys in five distinct areas of interest
- Created a database in Microsoft Access and Excel to store and manipulate questions and results
- Pilot tested surveys with both library staff and customers
- Recorded video interviews

Due to a lack of time, as seven weeks proved to be a limiting factor, the video interviews were not able to be completed. The following sections clearly describe the results of the steps descried in the Methodology that we took to meet these objectives.

4.1 Survey Design and Creation

The major motivation for this project comes from the desire of the Montgomery County Library system to reconnect with its general customer population. The avenue by which it wants to reconnect to its customers is through surveys. Therefore a large portion of our project was dedicated to the creation of these surveys.

The first step in creating these surveys was to communicate with the library representatives to discern what areas need to be evaluated. Our team decided to have a telephone conference during which we asked many questions in order to better understand exactly what the library desired from this project. Three major things became

apparent: First, the library was specifically interested in the program measures that it reports to the county government on a regular basis. These "program measures" are essential to the library in order for it to assure it continues to be efficient and effective in serving the public. They are also used by the Library System to help increase budget size and other items that the library may need in order to provide an excellent product. Second, the library was very clear on a need for a short survey that would take approximately thirty seconds to complete. Third, they requested our team create a data analysis tool that could be used by the library to interpret results. Our team then began researching questioning techniques and survey design techniques.

The library requested that five different surveys be created. The intent was to utilize specific questions in order to target specific customers after interacting with the library in a specific area. The five areas are circulation, information, program, facilities, and information technology. By breaking the survey questions down in this way, the surveys would be shorter and allow customers to fill out the section that directly relates to him/her, rather than answer questions on a longer survey that he/she may not be able to relate to.

Our next step was to begin deciding which questions should be asked. We first took a look at the program measures that Lennadene Bailey and Eric Carzon sent us in order to provide a basis for question types. We also looked at a case study (section 2.9) preformed by the Waterford Institute of Technology in order to gain question examples. Through our research and brainstorming prior to being on site in Washington, we were able to create the following nineteen questions as our initial set:

Information Services	Were your questions answered to your satisfaction? Were you helped in a timely manner? Were you treated with respect? Was the information desk easy to locate?
Programs Offered	Was the program area comfortable? How often do you use any programs offered? Why do you use the Library? Rate your overall satisfaction with this program. Did the program leader seem knowledgeable?
State of Facilities	Was the library well lighted? Where there enough computers available? Are the library operation hours adequate? Was the general appearance of the library clean? Was the library comfortable and welcoming?
Material Circulation	Was there a long line to wait in? Are late fees reasonably priced? How often do you borrow materials? Are you often able to find what you are looking for? When using the Inter Library Loan, is the transfer rate to long?

Figure 3 - Initial Survey Questions

These questions did not include the information technology area to be surveyed.

Next our team arrived in Montgomery County and began heavily revising the initial survey questions. We met with our liaisons within the first days of being in Maryland and discussed changes that needed to be made. We then brainstormed a second list. Soon after we meet with John Greiner, the senior management and budget specialist for Montgomery County, and he provided us with great insight about the survey process. Mr. Greiner was very familiar with surveying, because he has conducted many in the past for Montgomery County. He took a look at our work thus far and made many helpful recommendations.

He suggested that we strive to make sure that the questions would not make the library staff feel as if they were being evaluated in our surveys. We needed to be sure

that the verbiage of our surveys did not in any way target the staff. He also suggested that we be sure that the way we ask the questions can be understood by customers with many levels of education. It was his belief that it was a good idea to also include some general demographics questions that would allow for future analysis of customers. By cross-tabulating results, we may find patterns within a certain demographic. For example, we may find that the Latino population feels as though there are language barriers while other populations do not.

We next investigated the libraries and how they work. This process consisted of three steps. Our first step was to interact with the library as though we were a customer. Simulating the customer experience allowed us to discover how the library functions from the customer's point of view. We signed up for library cards and traveled to the Gaithersburg library. Our first observations were how crowded the library was and how many people were using the public computers. These observations immediately produced many questions, especially ones involving the information technology area. We borrowed a book in order to interact with the circulation desk and also asked a librarian at the information desk about the programs Montgomery County Library's offer. Our reason for this was twofold: it allowed us to interact with the information desk and helped us decide how to complete our second investigatory step, attending programs.

We decided to attend an adult program as well as a children's program, hoping that different questions would arise, and in fact they did. We traveled to the Bethesda Library to attend the children's program. This experience led us to create many questions about to the program environment, length of the program, and usefulness of the program. Later we traveled to the Little Falls Library to attend an adult program. This program

helped us to produce questions related to a program series and, due to the nature of the program, gave us more insight into information technology questions. When comparing the two programs, we found the program environments to be very similar.

Our next step was to investigate the interactions of the customers with the librarians. We hoped that by listening to the questions and concerns that customers had, we would be able to formulate questions. We traveled to Quince Orchard and sat down with some librarians while they were working. This proved to be very insightful. From this we created a few general questions, including one about hours of operation. Once we had a good grasp on all of the questions we were going to ask, we formatted them for review by the Customer Service Committee. The Customer Service Committee is a group of library staff that works to gauge the County Libraries performance.

John Greiner gave our team a copy of a survey that was created in the past, which we used as a guide to format our survey. We moved the demographic questions to the end, so that the customer would not feel intimidated by it. We also grouped some of the questions and asked them in a way that would be simple and quick to respond to. We then submitted them the Customer Service Committee for review. When we received the results of the review, we made small grammatical changes. The following is a master list of questions. This list includes questions that may not be surveyed, due to keeping the survey's concise:

Circulation Questions

About how long did you need to stand in line at the circulation desk today?
How would you rate books?
How would you rate CD's?
How would you rate DVD's?
How would you rate newspapers?
How would you rate children's books?
How well do you feel library fines are resolved?
How easy was it to find the materials you were looking for? (On the Shelf, Library Catalog, etc)
How easy was the library catalog to use?
How would you rate the efficiency of the layout and labeling of the library?
How would you rate your overall experience at the circulation desk?
How would you rate the time you waited in line at the circulation desk today?
How would you rate your overall experience with borrowing materials?
How would you rate the availability of the materials that the library offers?
How would rate the time it took to obtain materials using the Inter-Library-Loan, putting books on hold, etc.
What materials could be added to make the library more useful to you? (Newspapers, Books, Videos, etc)
How can the library improve its circulation of materials?

Figure 4.1 Survey Question List: Circulation

Facility Questions

How would you rate the hours of operation?
How would you rate the exterior appearance?
How would you rate the temperature?
How would you rate the noise?
How would you rate the cleanliness?
How would you rate the crowdedness?
How would you rate the lighting?
How would you rate the parking?
How would you rate the restrooms?
How often did you experience problems or delays because of language barriers?
What problems, if any did you experience because of language barriers?
How would you rate the facilities of the library in the following areas:
How could the facilities be improved
How easy was it to find your way around the library?
Do you feel that any of your expectations, regarding the facility were not met? Please explain.
How could the facilities be improved?

Figure 4.2 Survey Question List: Facilities

Information Questions

How would you rate your overall experience at the information desk?
How would you rate the time it took you to receive an answer from the Ask-A-Librarian service?
To what extent has the Ask-A-Librarian service been helpful?
How would you rate the time waited in line at the information desk today?
How do you feel the information desk service could be improved?
How helpful was the information you received at the information desk?
About how long did you need to stand in line at the information desk today?

Figure 4.3 Survey Question List: Information

Program Questions

How would you rate the educational value?
How would you rate the quality?
How would you rate the entertainment?
How would you rate the temperature?
How would you rate the noise?
How would you rate the cleanliness?
How would you rate the crowdedness?
How would you rate the lighting?
To what extent do programs you wish to attend meet your schedule?
How would you improve the program you attended?
How did you hear about this program?
Would you recommend the program to others? Why or why not?
If this program is part of a series do you plan to come to the remaining sessions? If no, why not?
How often do you attend programs?
How many times in the past thirty days have you attended a library program?

Figure 4.4 Survey Question List: Programs

Information Technology Questions

How would you rate the physical condition of the computers?
How would you rate the usefulness of the computer software?
How would you rate the time limit for computer use?
How would you rate the speed of the Internet connection?
How often are you able to find an available computer when you need one?
How often did the Internet connection satisfy your needs?
How could the computer facilities or network be improved?
What do you use the Internet for at the library? (research, entertainment, etc)
If you use a laptop, how easy was it to connect to the wireless network?

Figure 4.5 - Survey Question List: Information Technology

4.2 Pilot Testing

The pilot testing phase proved to be a very important step in both the wording of the survey and the distribution and collection procedures. We traveled to the Gaithersburg Library Branch in order to conduct our first pilot test. We then pilot tested at both the Bethesda and Rockville branches in order to get more diverse results.

4.2.1 Gaithersburg

When we arrived at the Gaithersburg branch we met with the staff to discuss how we wanted to pilot test. We placed a table at the front near the circulation desk. This table was used to collect the surveys as well as hand out both the Facilities and Circulation surveys. These surveys were handed out by our team. There were also chairs at the table that were available for customer to use while filling out the surveys. The Information Technology survey was handed out at the computer lab area while the customers were still using the computers. This survey was also handed out by a team member. The Information survey was handed out at the Information Desk by one of the librarians after they had finished interacting with a customer. We were not afforded an opportunity to pilot test the Programs Survey because there were no programs offered on the day we administered the pilot test.

Many customers asked us questions that led us to make changes to the surveys. A question that was frequently asked was if the customer would be able to comment on other library branches. Although we had a demographics section at the end of the survey that allowed the customer to fill in the branch and date, we feel that it may be more

appropriate to move these items to the very beginning of the survey and already have them filled in. This should be done for two reasons: First it would make it clearer that the survey being distributed is for that branch only. Second, it would be easier for the person inputting the results in the input form because they wouldn't have to flip to the back to find this information.

Another concern that was brought to our attention was a language barrier. For many people in Montgomery County, English is not their first language. It was suggested that there be surveys in many languages to accommodate those who may have a difficult time reading English. Also, we found that some people were able to comprehend the English text, but preferred to respond in another language for the open ended responses. This could pose a problem for the person inputting the results if they cannot speak the second language.

We also made some observations of our own. We noticed that at the table near the circulation desk, people felt more comfortable filling out the surveys if our team didn't watch them. If we turned our attention to something else we had more people complete the surveys and they took more time doing so, putting more thought into the open ended questions. We noticed that the target length of time to fill out the survey was met. It only took customers a few minutes at the most to fill them out.

We also noticed that many people did not fill out the back side of the surveys. We first attributed this fact to people not wanting to take the time to complete the entire thing. We noticed, however, that in many cases the respondent took the time to fill out all of the questions and offered a lengthy response to the open ended questions on the first side. By taking the time to be so helpful and to not finish the survey completely

does not make any sense. We concluded that people simply may not have realized there was a second side. Although we had directions at the top requesting both sides be completed, it was in small text and could be easily missed. Therefore, we added a small arrow at the bottom right hand side of the survey to indicate there was a second side.

Upon completion of the pilot testing, we brought the surveys back for compilation. We compiled 17 Information Technology surveys, 47 Facility Surveys, 21 Information surveys, and 36 Circulation surveys for a total of 121 surveys.

Because the purpose of the pilot testing phase was not to gather numerical data of the survey responses, we did not pay much attention to the numbers when analyzing the results of the pilot tests. However, one major pattern was quite apparent when reviewing the surveys. 95% of the responses received for the multiple choice questions asked on the Information Survey were ranked as the best or second best response. In fact, 62% of the surveys had the very best option selected for every question. These numbers are surprising because none of the other survey types show this pattern. In fact in one question, only 18% of the customers surveyed ranked the response as "good" or "very good" and in only one case, within all the other surveys, was the survey completely filled out by having the best option selected.

We feel there are two possible reasons for this anomaly. The first reason could be due to the nature of the interaction with the information desk. When customers inquire at the information desk, they generally receive the answers they are looking for. For example, maybe they are concerned when the latest Stephen King novel will be released, or maybe they needed help finding where the DVD's are located. In many cases, the customer has left feeling positive. This clearly will be reflected such positive results.

The second possible reason could be due to the nature of this particular survey's distribution. We noticed that the Information Survey was the only one not distributed by a team member. This made us question the distribution technique of the library staff. We noticed that after the staff at the Information Desk handed out the survey, they were in close proximity and face to face with the respondent. We feel that this could have caused an unintentional bias and skewed results.

The following are the surveys that we pilot tested in Gaithersburg and their results (the format was changed in order to conserve space). The numbers in parenthesis represent the number of people that chose that response. The responses for the open ended questions are not included (**PM** represents Program Measure):

Circulation

Please circle your answers for Questions 1-5

1. **How would you rate the physical condition of the following materials?**

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
Books	(12)	(16)	(5)	(1)	(0)	(1)
CDs	(5)	(9)	(5)	(1)	(0)	(10)
DVDs	(7)	(11)	(2)	(0)	(0)	(11)
Newspapers	(4)	(6)	(1)	(0)	(0)	(18)
Children's Books	(8)	(9)	(3)	(0)	(0)	(12)

2. **How easy was it to find the materials you were looking for (on the shelf, library catalog, etc.)?**

Very Easy	Somewhat Easy	Average	Somewhat Difficult	Very Difficult	Don't Know
(19)	(10)	(5)	(1)	(0)	(1)

3. **How would you rate the availability of materials that the library offers? **PM****

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(11)	(17)	(6)	(0)	(0)	(2)

4. **How would you rate the time it took to obtain materials using the Inter-Library-Loan, putting books oh hold, etc.? **PM****

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(12)	(8)	(3)	(0)	(1)	(9)

5. **How would you rate the time you waited in line at the circulation desk today? **PM****

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(19)	(10)	(2)	(0)	(0)	(4)

6. **How can the library improve its circulation of materials?**

7. **How well do you feel library fines are resolved?**

8. **What materials could be added to make the library more useful to you? (Newspapers, Books, Videos, etc.)**

Figure 5.1 Gaithersburg Pilot Test Surveys: Circulation

Facilities

Please circle your answers for Questions 1-3

1. How would you rate the facilities of the library in the following areas:

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The hours of operation	(21)	(19)	(5)	(1)	(0)	(1)
The appearance of the exterior	(14)	(26)	(5)	(0)	(0)	(2)
The temperature	(22)	(15)	(10)	(0)	(0)	(0)
The noise	(11)	(20)	(14)	(1)	(1)	(0)
The cleanliness	(19)	(24)	(4)	(0)	(0)	(0)
The crowdedness	(9)	(18)	(18)	(1)	(1)	(1)
The lighting	(16)	(22)	(8)	(1)	(0)	(0)
The parking	(18)	(18)	(6)	(1)	(0)	(4)
The restrooms	(9)	(17)	(9)	(3)	(0)	(8)

2. How easy was it to find your way around the library?

Very Easy	Somewhat Easy	Average	Somewhat Difficult	Very Difficult	Don't Know
(25)	(7)	(18)	(0)	(0)	(0)

3. How often did you experience problems or delays because of language barriers?

Almost Always	Often	Sometimes	Seldom	Never	Don't Know
(0)	(0)	(2)	(5)	(37)	(2)

4. What problems, if any, did you experience because of language barriers?

5. Do you feel that any of your expectations regarding the facility were not met? Please Explain.

6. How could the facilities be improved?

Figure 5.2 Gaithersburg Pilot Test Surveys: Facilities

Information

Please circle your answers for Questions 1-5

1. **How would you rate your overall experience at the information desk?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(18)	(2)	(1)	(0)	(0)	(0)

2. **How would you rate the time it took you to receive an answer from the Ask-A-Librarian service?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(15)	(3)	(1)	(0)	(0)	(1)

3. **To what extent has the Ask-A-Librarian service been helpful to you?**

Very Helpful	Somewhat Helpful	Not very Helpful	Not Helpful At All	Don't Know
(15)	(4)	(0)	(0)	(1)

4. **How helpful was the information you received at the information desk? **PM****

Very Helpful	Somewhat Helpful	Not very Helpful	Not Helpful At All	Don't Know
(18)	(2)	(0)	(0)	(0)

5. **How would you rate the time you waited in line at the information desk today? **PM****

Very Good	Good	Fair	Poor	Very Poor	Don't Know
(16)	(3)	(1)	(0)	(0)	(0)

6. **How do you feel the information desk service could be improved?**

Figure 5.3 Gaithersburg Pilot Test Surveys: Information

Information Technology

Please circle your answers for Questions 1-3

1. **How would you rate the library's computer technologies in the following areas:**

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The physical condition of the computers	(10)	(7)	(0)	(0)	(0)	(0)
The speed of the Internet connection	(7)	(9)	(1)	(0)	(0)	(0)
The usefulness of the computer software	(4)	(8)	(3)	(0)	(0)	(2)
The time limit for computer use	(2)	(1)	(10)	(4)	(0)	(0)

2. **How often are you able to find an available computer when you need one?**

Almost Always	Often	Sometimes	Seldom	Never	Don't Know
(5)	(6)	(6)	(0)	(0)	(0)

3. **How often did the internet connection satisfy your needs?**

Almost Always	Often	Sometimes	Seldom	Never	Don't Know
(10)	(4)	(2)	(0)	(0)	(1)

4. **How could the computer facilities or network be improved?**

5. **What do you use the internet for at the library (research, entertainment, etc.)?**

6. **If you use a laptop, how easy was it to connect to the wireless network?**

Figure 5.4 Gaithersburg Pilot Test Surveys: Information Technology

4.2.2 Bethesda

In order to test potential problems, the team was sure to pilot test a very similar way in Bethesda as was tested in Gaithersburg. This was done to control variables. Once again we placed a table and chairs near the exit to distribute the Circulation and Facilities surveys. We asked the librarians at the Information Desk to hand out the Information surveys while one member from our team distributed the Information Technology surveys near the computer lab. Bethesda offered a program that was ideal for pilot testing because it was a children's program. Before the program was finished, the program leader asked all of the attendees to fill out the survey.

For this pilot test we were sure to change the location of the Branch Name and Date to the front as well as add and arrow and text at the bottom of the page to signify the survey was continued on the back. We also asked the librarians at the Information desk to request that the patrons fill out the surveys at our table near the exit. This was done so that we could compare the Information results in Gaithersburg with Bethesda. If the results were similar it would indicate that there was no unintentional bias involved. If the results are very different it would indicate that having the librarians close to the respondents while they are being surveyed would unintentionally influence the customer. Neither result would be one hundred percent certain, however, because they were tested at different branches. This would only be used to help make a recommendation.

One librarian was concerned about a question on the Information survey feeling as though it was not appropriate to hand out. The question asked about the Ask-A-Librarian service that the library offers. She was concerned that patrons would feel that asking a librarian a question at the Information desk would be utilizing the Ask-A-

Librarian service, which it would not. She recommended that we change the question to be clear it was the Ask-A-Librarian telephone, email, and chat service.

Many customers wanted to take the surveys home to fill out and hand in on a later date. Because this was only a pilot test and would only be distributed on one day in Bethesda, we were not able to allow this. However, we believe that during the actual survey process it would be a good idea to allow such an action.

We compiled 27 Information Technology surveys, 18 Facility surveys, 24 Information surveys, 24 Circulation surveys, and 8 Program surveys for a total of 101 surveys. Once again, the pilot testing phase was designed to test the procedures of distribution and collection; however we needed to look at the data collected to compare it with Gaithersburg's pilot test.

One immediate pattern was very obvious when reviewing the completed surveys. 54% of the Information surveys had "N/A" written near two of the questions. It seems that the "N/A" was written in the same handwriting and, in many cases, with a different writing utensil than the rest of the survey. This seemed irregular, especially because this didn't happen in any of the other surveys distributed, either in Gaithersburg or Bethesda. We believe that it is possible that a librarian may have written it in, thinking they would be improving the surveys. As a result, 46% of the Information surveys did not have a response recorded for two of the questions.

One of the goals of this pilot test was to test the influence the librarian would have on the customer, if any. Previously in Gaithersburg, 95% of the responses to the multiple choice questions asked on the Information survey were ranked as the best or second best response. 62% of them had the very best option selected on every question. Excluding

the two questions that may have been jeopardized, 96% of the responses surveyed at the Bethesda pilot test were ranked as best of very best and 75% were ranked very best throughout the entire survey. Therefore, we feel that although the proximity the librarian to the respondent may have some influence, it is not very much.

4.3 Data Analysis Tool

The first step in creating the data analysis tool was to decide what exactly the tool would involve. We decided it would involve an input form that would be used to collect and store data and a results section that would output results numerically and graphically. We decided it would be best to look at this tool as two separate steps and work on one at a time, starting with the input form.

Microsoft Access was the program of choice because it has the capability to allow our team to manipulate the form section so that a user will not have the ability to change any formulas we create, unless authorized, and will prevent him/her from making many mistakes. It is also a program that the library staff is familiar with using. We learned that the library may assign one of its current employees to enter data or it may hire someone specifically for the job. Because there is a possibility of a large range of computer experience between possible users, we needed to make this program user friendly.

We began creating the form after learning how to use Access from Lennadene Bailey. She taught us the basics of the program, such as how to create and input data to a database and how to draw questions and reports from it. We learned a lot from her but soon realized that Microsoft Access would have a larger learning curve then first anticipated.

We first input all of the survey questions into a spreadsheet and added new ones as they were decided upon. Eric Carzon then suggested that we create nomenclature to clearly identify questions. This was a great idea for two major reasons: first it would allow specific questions to be selected based on the current desires of the library. It would be very simple to grab specific questions from our spreadsheet containing all of our questions, depending on the libraries current desires, should those desires change in the years to come. Secondly, if the library decides to put these survey questions in the internet, in an online survey, each question would be easily identifiable. The following is the nomenclature key:

Title	Description	Abbreviation
Survey	Facilities Circulation Information Programs Information Technology	F C I P T
Question Nomenclature Number	Identification Number	1,2,3 etc
Version	Question Version	A,B,C etc
Importance	Yes No	Y (Checked) N (Not Checked)
Category	Program Measure Other	PM Oth
Design	Multiple Choice Open Ended	MC OE
Quality	Qualitative Quantitative	QL QN
Response Type	Rating Frequency Simplicity Helpfulness Other	R F S H O

Figure 6 - Nomenclature Key

For example, the nomenclature (**F.1.A.Y.PM.MC.QL.R)** would represent the first question on the facility survey. This question would be the first draft and be marked as important because it is a program measure. It would be a multiple choice question and yield a qualitative result. The response options would be from the rating set of choices. Figure 7 shows a list of response options:

Rating

Very Good	Good	Fair	Poor	Very Poor

Frequency

Almost Always	Often	Sometimes	Seldom	Never

Simplicity

Very Easy	Somewhat Easy	Average	Somewhat Difficult	Very Difficult

Helpfulness

Very Helpful	Somewhat Helpful	Not Very Helpful	Not Helpful At All	

Other

Open Ended Responses

Figure 7 - Response Options

After assigning the nomenclature to each question within Access, the design of the input form was created. We began by sketching the initial layout on paper so that we could have a visual idea of how to create the form. Due to the fact we were not adept with Microsoft Access, Lennadene Bailey gave us a lot of her time when creating the form. An example form can be seen in Figure 8:

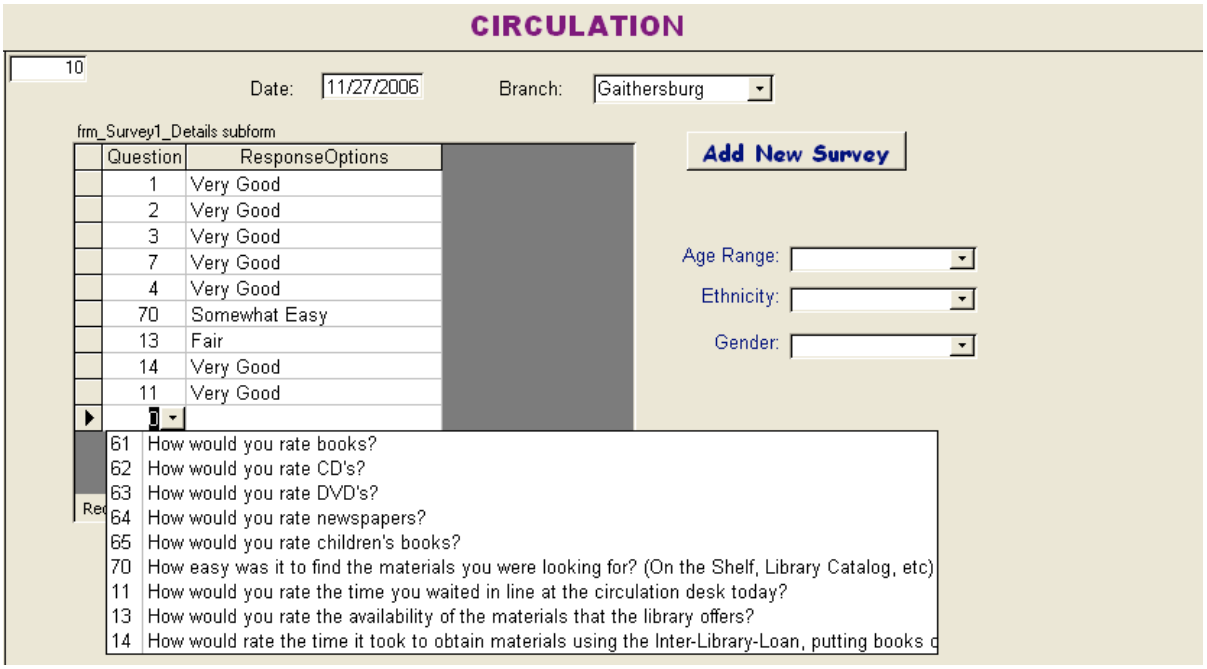


Figure 8 – Input Form

We designed the form to mesh with the surveys. The user will first begin the program by selecting which form to input data into. There is a separate form for each of the five surveys. The form has a dropdown box on its main page that is used to select the library branch. There is also a free text field that is used for logging the date the survey was completed. This sub-form contains all of the survey questions specific to that survey type, as well as a list of responses unique to each question. We designed it in this way for ease of use by the person inputting the data. By only having the survey questions that are specific to the survey type appear in the sub-form, the amount of information that the user needs to be concerned with is reduced by approximately ninety percent. This decrease is a result of the smaller size of the list of questions to choose from when inputting results. The person inputting data will simply need to select from another dropdown box, the response for each question that was circled by the respondent taking the survey. Finally there is a button that can be clicked to send all of the data to the

database that compiles all the results, and clears the sub-form. This was done so that the user will not need to select the survey type, library branch, and date, with every survey entry. For example, if the user is inputting surveys of the same type, from the same branch, on the same date (which would happen frequently) designing it this way would save time.

All the results will be submitted to a database in Access. When it is time to interpret the data, the user exports the large database containing all of the results to a Microsoft Excel spreadsheet. Once the data is then copied into a spreadsheet we designed. There are five different Excel files; one for each survey type. Each spreadsheet has a workbook entitled "Raw Data" and another entitled "Tabulation". The raw data workbook accepts the file the user exported from Microsoft Access. By clicking on the tabulation workbook, the user can see the results to all of the questions, the number of responses per response choice, and a percentage of people that selected each response. The following images are examples of the Raw Data workbook and the Tabulation workbook. The data you see was collected during pilot testing:

Circulation

	Question Number								
Survey ID	Q1A	Q1B	Q1C	Q1D	Q1E	Q2	Q3	Q4	Q5
	Very	Don't	Don't	Don't	Don't	Somewhat		Very	
1	Good	Know	Know	Know	Know	Easy	Good	Good	Good
	Very	Very	Very	Very	Very				Very
2	Poor	Poor	Poor	Poor	Poor	Average	Poor	Fair	Good
		Don't	Very	Don't	Don't				Very
3	Good	Know	Good	Know	Know	Very Easy	Good	Good	Good
	Very			Don't	Very	Very	Very	Very	Very
4	Good	Good	Good	Know	Good	Difficult	Good	Good	Good
	Very	Don't	Don't	Don't	Don't			Don't	
5	Good	Know	Know	Know	Know	Very Easy	Good	Know	Good
	Very	Don't	Don't	Very	Don't		Very	Very	Very
6	Good	Know	Know	Good	Know	Very Easy	Good	Good	Good
		Don't	Don't	Don't				Very	
7	Good	Know	Know	Know	Good	Very Easy	Good	Good	Good
									Very
8	Good	Good	Good	Good	Good	Very Easy	Good	Good	Good
		Don't	Don't	Don't		Somewhat		Very	Don't
9	Good	Know	Know	Know	Good	Easy	Good	Good	Know
							Very		
10	Good	Good	Good	Good	Good	Very Easy	Good	Good	Good
	Very	Very	Don't	Don't	Don't		Very	Don't	Very
11	Good	Good	Know	Know	Know	Very Easy	Good	Know	Good
	Very	Don't	Don't	Don't	Don't		Very		Very
12	Good	Know	Know	Know	Know	Very Easy	Good	Good	Good
				Don't	Don't				Very
13	Good	Good	Good	Know	Know	Average	Fair	Good	Good
	Very	Very			Very		Very		
14	Good	Good	Good	Good	Good	Very Easy	Good	Good	Good
	Very	Very	Very	Very	Very				Very
15	Good	Good	Good	Good	Good	Very Easy	Poor	Poor	Good
	Very		Very	Don't	Very			Very	Very
16	Good	Fair	Good	Know	Good	Very Easy	Good	Good	Good
	Very	Don't	Don't	Don't	Very			Don't	
17	Good	Know	Know	Know	Good	Average	Good	Know	Good
	Very	Very	Very	Don't	Don't		Very	Very	Very
18	Good	Good	Good	Know	Know	Very Easy	Good	Good	Good
	Don't			Don't	Don't	Don't		Don't	Very
19	Know	Poor	Good	Know	Know	Know	Good	Know	Good
	Very	Don't	Don't	Very	Don't		Very		Very
20	Good	Know	Know	Good	Know	Very Easy	Good	Good	Good
			Don't	Don't		Somewhat	Very	Very	Very
21	Good	Good	Know	Know	Good	Easy	Good	Good	Good
	Very	Don't	Very	Don't	Don't				Very
22	Good	Know	Good	Know	Know	very Easy	Good	Good	Good
		Don't	Don't	Don't				Very	Very
23	Good	Know	Know	Know	Good	Very Easy	Good	Good	Good
	Very	Don't	Don't	Don't	Very		Very	Don't	Very
24	Good	Know	Know	Know	Good	Very Easy	Good	Know	Good

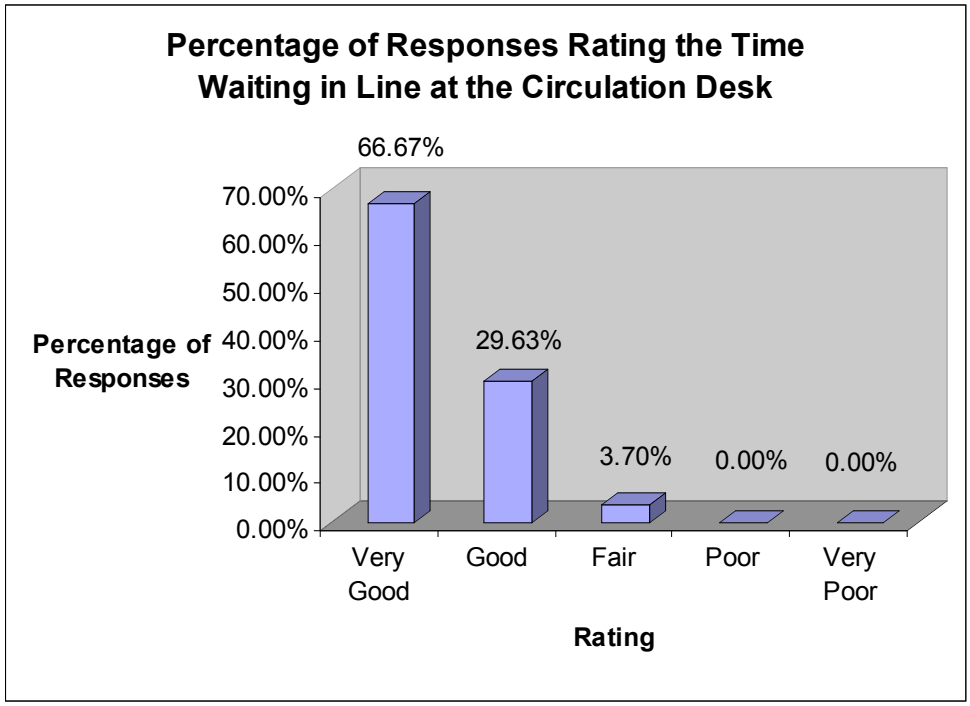
Figure 9 – Raw Data Workbook

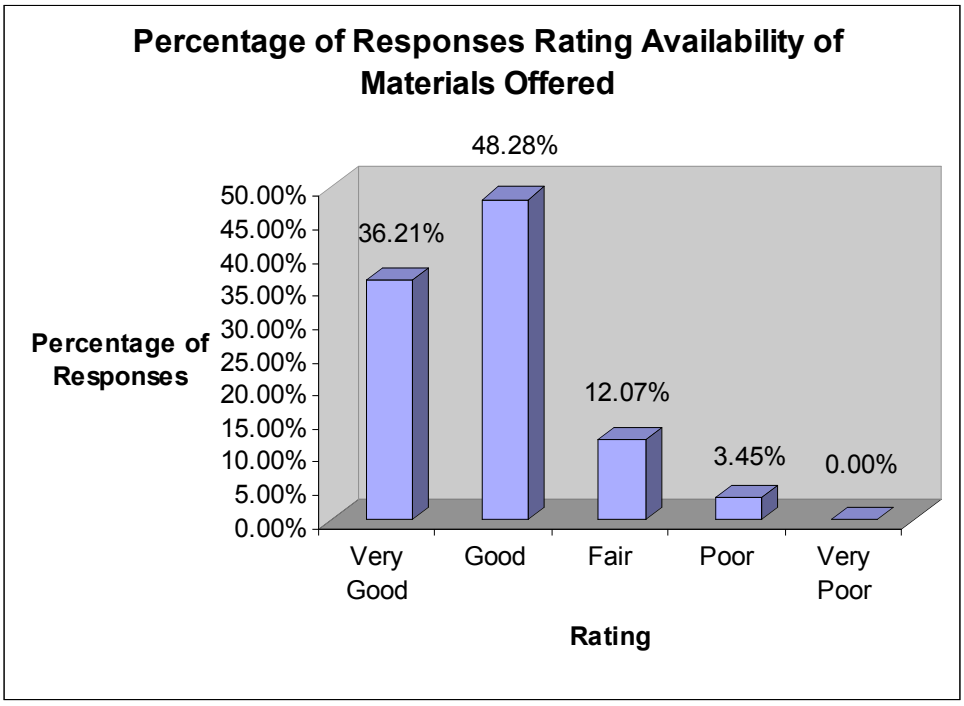
How would you rate the condition of the books?		
	Percentage of Responses	Number of Responses
Very Good	43.33%	26
Good	40.00%	24
Fair	8.33%	5
Poor	0.00%	0
Very Poor	1.67%	1
Don't Know	6.67%	4
Total		60

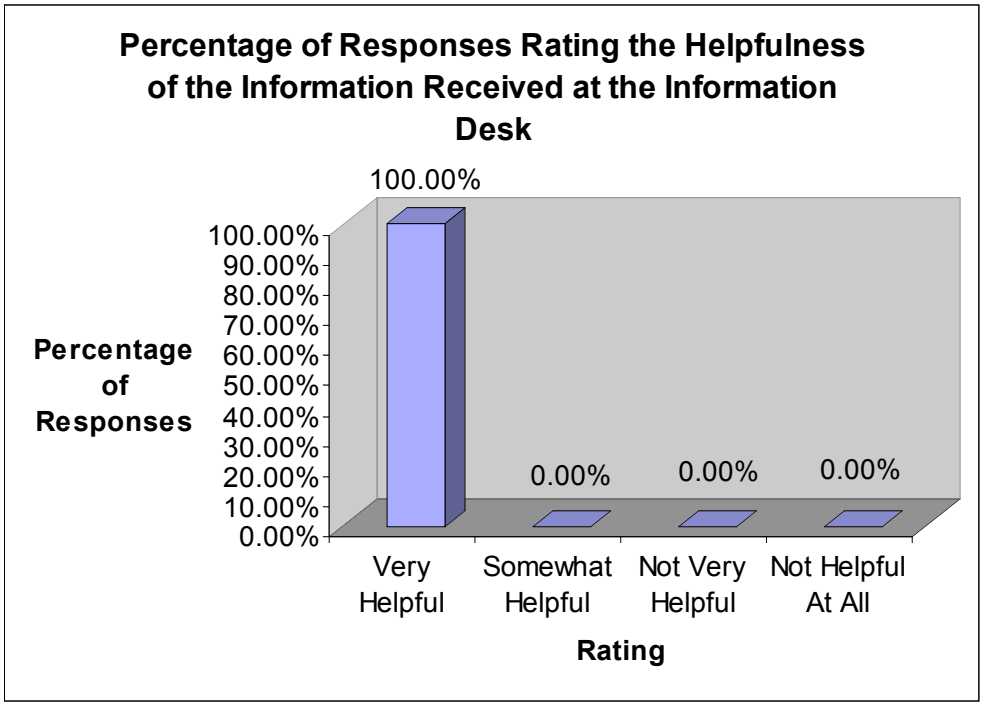
How would you rate the condition of the Newspapers?		
	Percentage of Responses	Number of Responses
Very Good	11.67%	7
Good	15.00%	9
Fair	1.67%	1
Poor	0.00%	0
Very Poor	1.67%	1
Don't Know	70.00%	42
Total		60

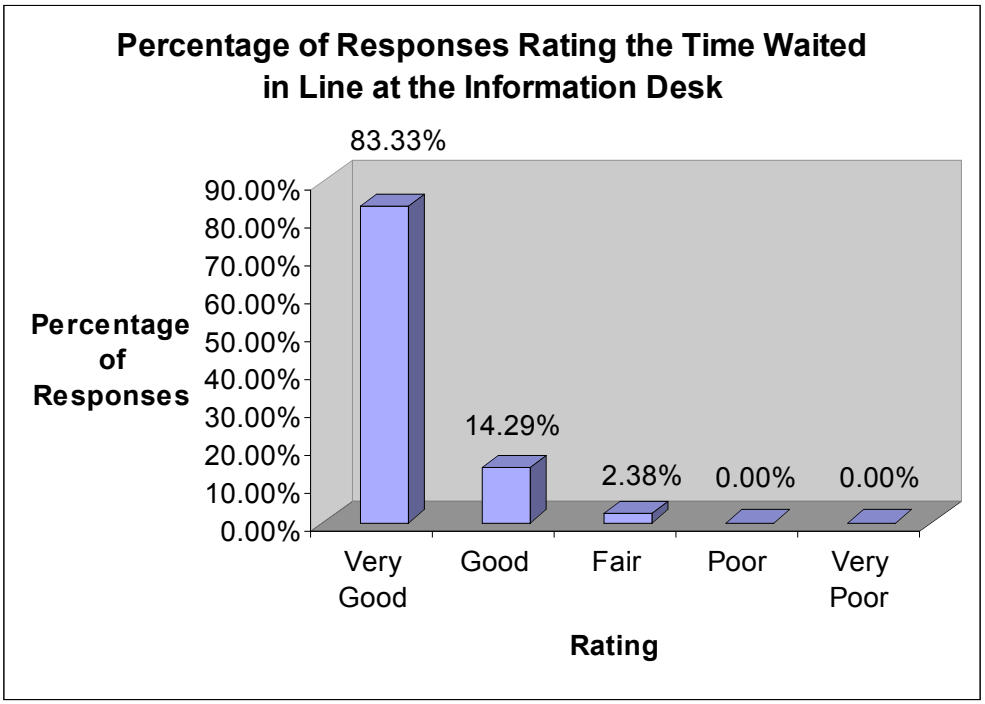
Figure 10 – Tabulation Workbook

The survey types that have program measures also have two more workbooks. One entitled "Program Measures" and one entitled "Calculations for Graphs" The Program Measures workbook contains the program measure results and a graph to represent the results. The Calculations for Graphs workbook contains formulas used to automate the graph's creation. The following graphs were generated from the pilot tests and allow for easier interpretation than text:


Percentage of Responses Rating the Time Waiting in Line at the Circulation Desk
66.67%
29.63%
3.70%
0.00%
0.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Percentage of Responses
Very Good
Good
Fair
Poor
Very Poor
Rating


Percentage of Responses Rating Availability of Materials Offered
48.28%
36.21%
12.07%
3.45%
0.00%
50.00%
45.00%
40.00%
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
Percentage of Responses
Very Good
Good
Fair
Poor
Very Poor
Rating


Percentage of Responses Rating the Helpfulness of the Information Received at the Information Desk
100.00%
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Percentage of Responses
0.00%
0.00%
0.00%
Very Helpful
Somewhat Helpful
Not Very Helpful
Not Helpful At All
Rating


Percentage of Responses Rating the Time Waited in Line at the Information Desk
83.33%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Percentage of Responses
14.29%
2.38%
0.00%
0.00%
Very Good
Good
Fair
Poor
Very Poor
Rating

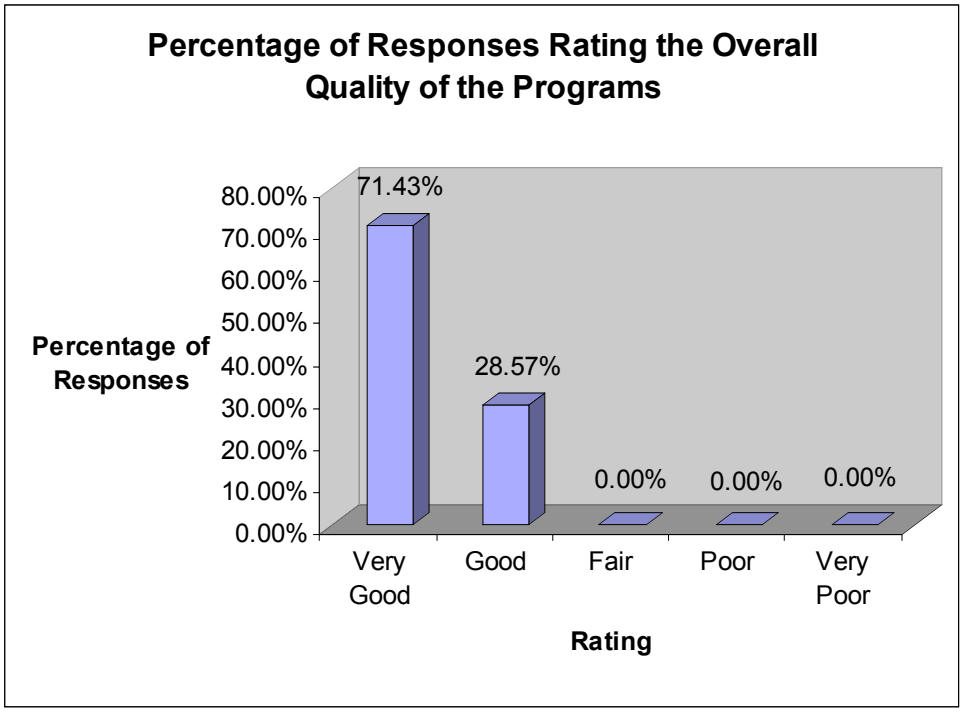


Figure 11 – Pilot Test Graphical Program Measures Results

4.4 Determining Sample Size

It is very important in this project to ensure that the surveys will produce valid results so the results can be used in the library system's future decision-making. To accomplish this, the team produced surveys and pilot tested them to determine if they can be trusted to reach a sample of the population that is large enough to be truly representative. The formula used for determining this minimum sample size relies on a few variables (Cochran 1977):

- Type of data to be collected
- Margin of error
- Alpha level
- Variance

As explained earlier, data can either fall into categorical or continuous types depending on the measurement scale used to collect the data. Categorical data types were the types of data that were used for this project. This is conclusion is utilized to determine the formula used to determine sample size.

The next variable used in the formula for sample size is the acceptable margin of error. It is more difficult to produce a small margin of error with data types like the ones used in this project due to the fact that the data is purely based upon the opinions of the customers and not any quantitatively measurable qualities. Therefore, the team used the commonly accepted margin of error for categorical data types of five percent. The results of these surveys will be used to make decisions regarding the future of the Montgomery County Library system so accuracy is important. However, perfect precision cannot be achieved due to the nature of the data being collected. Rather, tendencies in customer opinion will be considered to make decisions, so there is no reason to adjust the commonly accepted five percent margin of error for these category of surveys.

The alpha level is the level of risk that the researcher is willing to take, to ensure that the true error exceeds the accepted margin of error. For example, an alpha level of 0.05 means that one holds a 95% confidence in the results. In the case of the Montgomery County Library, the library wants to use the results of these surveys to decide how to change the programs and services that the library offers in order to please its customers. In the example provided in this section, an alpha level of 0.01 was used. This alpha level is commonly used in research studies where the results hold a great deal of weight in future decisions. A 99% confidence is very high and likely to not be

employed by the libraries, but the formula to follow will demonstrate how even such a confidence level is not outside the realm of possibility for the library.

The final element of the formula for finding the minimum sample size is the variance of the survey variables. It is possible that each question on the survey has a different variance but this difference will be very small since the questions were all posed in a similar fashion. Without extensive pilot testing it is not possible to find the exact variance of the survey results, but the variance can be estimated safely by using 0.25. The formula for sample size relies on an estimate of variance of $(p)(q)$ where $p = 1 - q$, so the largest this value can be is 0.25. Cochran's formula for the required sample size is as follows (Bartlett et al., 2001):

$$\underline{n}_0 = \frac{(\underline{t})^2 * (p)(q)}{(\underline{d})^2}$$

Where $\underline{t}$ = the value for selected alpha level = 2.58 in this case, for selected alpha level of .005 in each tail.

Where $\underline{d}$ = the acceptable margin of error the researcher is willing to take = .05 in this case.

Where $(p)(q)$ = the estimate of variance = .25 in this case. $p = 1 - q$, so the largest possible estimate of variance would result from assuming p and q to both equal .5

Evaluating the equation with these chosen values gives the following:

$$\underline{n}_0 = \frac{(2.58)^2 * (.25)}{(.05)^2} = 666$$

This means that for the results of a single question to be considered with a 99% confidence, at least 666 responses to that question must be collected. However, Montgomery county has often used an alpha level of .10 in the past when conducting

similar research. This confidence of 90% is very suitable to the purposes of the Montgomery County Libraries to gain feedback from their customers. Using this alpha level of .10, we find that the t-value is now 1.65 and the resulting minimum sample size is much smaller:

$$\underline{n}_0 = \frac{(1.65)^2 * (.25)}{(.05)^2} = 273$$

These values should be appropriate for the survey in this project, but the final decision on alpha level, margin of error, and variance is entirely up to the county.

Based on our pilot testing, these numbers should be very attainable for the county, even the extremely high 99% confidence sample size of 666. In roughly ten hours of pilot testing we averaged over 5.3 completed surveys per hour on the four surveys that were distributed in the library. We were only able to pilot our Programs survey during one program and received 8 results.

5 Conclusions and Recommendations

Montgomery County Department of Public Libraries (MCDPL) is one of the best in the country, handling millions of visitors and transactions a year. Like the other branches of government in Montgomery County, it evaluates itself based on a series of program measures. Some of these program measures, most notably in the area of service quality, have been blank for at least two years, and some for even longer than that. Even though the system was created for the purpose of providing a complete set of program measures, its capabilities are actually much greater. Its flexible design can easily adapt to any changes the program measures may undergo, and at the same time, provides other information that the library deems important.

5.1 Conclusions

The goal of our team was to create a system of tools for data collection and analysis. This system would be used to provide the MCDPL with mass quantities of information regarding its customer service. This information can be used by the MCDPL to make changes or upgrades to the individual branches and to provide a complete set of program measures which are used to evaluate the MCDPL. To accomplish this goal, the system was broken down into three different tools that had to be created.

5.1.1 Question Database

The first tool was a database that contains many different questions that would provide the library with specific customer feedback. The questions within this database are all associated with a specific set of letters and numbers that compose its nomenclature. This nomenclature uniquely identifies each question, but at the same time can also be used to group certain questions together. If one were so inclined, they could sort the questions by a number of different variables, including whether or not the question pertains to a program measure, which area of the library the question pertains to, whether or not the question is multiple choice, etc. It has been indicated that the MCDPL may use these questions online to gather data. It will most likely take the form of a window asking the customer to answer a solitary question before they proceed through the website. The questions database is ideal for this situation since one can narrow down the question that one wants so easily.

5.1.2 Surveys

The second tool out of this project is a set of five surveys. These surveys, composed of questions from the database, will be used by the MCDPL for the actual collection of customer feedback. To encourage willingness on the part of the customers to participate, the surveys are brief; none are more than one double-sided page, no do any of the surveys take more than five minutes to complete. The surveys focus on five different aspects of library branches: Circulation Services, Information Services, Programs Offered, Facilities, and Information Technology. The reasoning behind this is that each survey will be conducted one at a time on different days. This allows the MCDPL to choose when it would like to receive customer feedback about a certain area and also prevents the customer from feeling overwhelmed by either filling out a very long survey or several short surveys.

5.1.3 Data Analysis Tool

The third tool in the system is used to compile and analyze the data collected from the surveys. This tool consists of forms and worksheets within Microsoft Access and Excel respectively. Once the surveys have been filled out the data entry process can begin. The person entering the data is presented with an Access form where they enter the date that the survey was conducted, the branch in which it was conducted, and the area of the library to which the survey pertains. These three characteristics are what makes each survey unique, and once entered will bring the user to a new form containing all the questions on that survey, each followed by a menu containing possible answers. All that is expected of the user is to select the answer from the menu that corresponds to the answer on the survey. Once the data entry is complete, the data will be exported into an

Excel spreadsheet. This spreadsheet contains the raw data a well as statistics, graphs, etc. This allows for easy viewing of the data, both before and after analysis.

5.2 Recommendations

The MCDPL requested this project in order to complete their program measures and to reconnect with their customers. However, this project does not have the same objective. The purpose of this project is to lay the groundwork for this customer feedback system and give MCDPL tools for operation. This project leaves the MCDPL with a tangible and tested method for collecting customer feedback.

5.2.1 Focus Groups

The background chapter mentioned a library that used focus groups as a way to analyze their problems. This method was originally explored as an alternative to surveys for gathering customer feedback, however, it was not chosen because of the type of customer feedback it generates. Focus groups are better suited for analyzing and brainstorming solutions for specific problems. However, focus groups may still be useful to the MCDPL. If after conducting the surveys, there is a problem or issue that arises very often, a focus group could be an excellent way to analyze and brainstorm solutions to issues that are constantly arising. For more information about focus groups, see section 2.7 in this document.

5.2.2 Surveying

After conducting two rounds of pilot testing, there are certain procedures and ways of conducting one's self that should be mentioned. These observations and suggestions apply to general survey distribution.

- Though necessary for the pilot tests, there should never be more than one survey being handed out at a time. During pilot testing, there was an issue of trying to ensure that no person filled out more than one survey.
- Regardless of which survey is being conducted, seating should be available to the customers. Often this is necessary for the elderly and physically handicapped.
- Whoever is handing out and collecting the surveys should try to stay in front of the seating area, this way his or her back will be to the customer whilst they complete the survey.
- It was found that when asking customers to complete a "short survey about the library" a common response was "how short is it?" To this a good response is "as long or short as you would like it to be, don't fill out anything you don't want to". Getting any input is better than none, even if the survey is incomplete.
- Another good practice when speaking to the customers is to always is extra polite. It would be unusual not to have at least some customers refuse in a rude manner. By being courteous to these people you're making both yourself and the whole library appear in a favorable manner.

The pilot testing has given some insight about the best methods of distribution and collection of the surveys. When distributing the surveys, we recommend several different methods based on the survey type.

- Facilities surveys should be handed out in the lobby near the main entrance. As they are leaving the library, politely ask the customer to complete the survey. Handing out the surveys as the customer exits is beneficial for several reasons; first it gives them time to actually experience the facilities before they rate them. Second, we considered handing out the surveys as the customer enters, and collecting them as they leave but this is not a feasible idea. This process makes it very easy for the customer to "lose" the survey somewhere in the library.
- The circulation surveys should be distributed near the circulation desk; often the same area as the facilities. However, while the facilities survey should go out to everyone, the circulation surveys should only be completed by people who have used the circulation desk that day. If the surveys are set up near the desk, the surveyor can see

who is taking out materials and ask them to participate as they are leaving the library. Also, if there is a dispute, over a fine for example, it's better not to be sitting right at the circulation desk with the librarian when asking the customer to fill out a survey.

- The program surveys should be handed out to the participants (or their parents depending on their age) upon completion of the program.
- The information technology surveys should be handed after the customer has sat down at a computer. The distributor must also be aware of anyone who might bring in a laptop to use during their visit.
- The information surveys should be handed out at the information desk. However, for the privacy of the customer, these surveys should be filled out and turned in somewhere else; possibly a return box near the exit of the library.

These techniques and tips are highly recommended to make the surveying process as smooth and professional as possible. All of these recommendations, and more, are discussed thoroughly in Appendix B: Survey Distribution and Analysis Instruction Manual.

5.2.3 Specific Survey Creation

One possibility that the MCDPL might want to consider is creating branch-specific surveys. By visiting the different branches, one can easily see that each branch has to deal with its own particular set of problems. These branch specific surveys are not something that should be rushed to be implemented; it will most likely be a very complicated process. First and foremost is that any survey revisions would require intensive modifications to be made to the system. If each branch had its own survey there would need to be twenty-one new forms pertaining to those surveys created within the data analysis tool. The MCDPL should be completely comfortable with the system in place before any modifications are made.

Secondly, once the MCDPL is comfortable enough with the system to make these changes, it is recommended that very few questions be altered. The best method would be to have a standardized template for each type of survey that allows one or two customizable questions. If this is implemented it will allow the branches to address their specific needs while still keeping some questions constant, in turn allowing easy comparison among branches.

5.2.4 Determining Sample Size

When minimum sample sizes are considered, a few key points be considered. One is that the variance has been estimated as the largest value possible and that the true variance is likely to be significantly smaller. During our pilot testing, several questions roused responses that tended towards the best two response options with only a few outliers on the opposite end of the spectrum. The library can pursue determination of variance, but it may be more efficient to simply calculate sample size using the maximum value of variance of 0.25. This applies to all variables of the sample size equation.

Also remember that not every survey will have every single question answered and a response of "Don't Know" is not counted as a response. To draw reliable conclusions from a specific question, that question must receive the minimum number of responses. An extreme example of this would be that 272 responses of "Don't Know" and one response of "Very Poor" do not mean that one hundred percent of customers rate "Very Poor" for this question. When analyzing results of the survey, the library should count the number of responses to a particular question, not simply the number of completed surveys received.

Finally, it is important to remember that countywide conclusions may be reliably drawn from a grand total of responses equal to this minimum sample size. This means that, across the twenty-one branches of the library system, an average of thirteen responses per branch is enough to reliably base a countywide decision. However, it is recommended that more responses be collected in order to make branch-specific decisions. Repeating the procedure exemplified in this section, but for a particular branch, will yield a minimum number of responses needed in order to hold confidence in those branch-specific results. Branch-specific surveys may be used to accrue these results, a concept discussed in depth above in section 5.2.3.

5.2.5 Alternative Data Entry

When creating the data analysis tool, other methods of data entry were considered. The first alternative was to have a kiosk located within the library with a computer with touch-screen technology. This would allow the customers a quick, private, and very simple way to provide feedback. Unfortunately, there were a number of drawbacks with this method, most notably being the cost. It is also likely that it would not be used often if there was not someone standing nearby asking customers to use it.

Another method that was considered was to use machines to tabulate and analyze the data. This would save the MCDPL time and money that would otherwise be used by someone entering the data by hand. However, the machine would be expensive and would have special requirements. Those types of machines can only read certain types of paper and would require special answer forms to be handed out along with the surveys. This method may be feasible in the future, especially if new technology emerges, but it was not a good fit for this project.

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6 Appendix A – Mission and Organization of the Montgomery County Libraries

The Montgomery County Library system is a part of the Montgomery County Government consisting of twenty-one branches, new and old, located across Montgomery County, and one main branch, in Rockville. The library system in the county was born in the 19th century when women's clubs managed the operations of several local libraries. In 1945, a countywide library system was encouraged by a Maryland state law and in 1949, it was decided that this unified county system was advantageous in order to provide better service to the public. The first libraries joined the Montgomery County Library System in 1950 after the Montgomery County Council created the Department of Public Libraries.

As it exists today, the Montgomery County Library System services half a million customers, through program opportunities and material circulation, and is a common meeting place for students and business personnel. It does an excellent job of handling six million visits and over nine million material circulation transactions a year and is consistently placed in the top ten library systems in the nation based on Hennen's American Public Library Rating (HAPLR) Index. The county libraries have received a budget increase of almost twelve percent for Fiscal Year '07, up $3.97 million to $38.36 million. The library system has been able to increase front-line staffing (circulation and information staff, shelving assistants, etc.) as well as increase funding for the materials collection. All twenty-one library branches have now been outfitted with Wi-Fi technology for convenient public access to the Internet. Also the Circulation system server, which provides for searching the library catalog as well as for checking-out and checking-in materials, has been replaced with faster technology. Additionally in Fiscal

Year ’07, new libraries in both Germantown and Rockville will open their doors to the public.

The Montgomery County Library System has a specific mission statement and vision that it uses to guide their development. In turn, this team used this mission statement to guide this project. The library system’s mission statement, vision, values and key results are officially expressed as follows (MCPL’s Vision, Mission, Values, and Key Results, 2004):

> **Our Vision**
>
> Montgomery County Public Libraries are the gateway for easy and equitable access to information, ideas and enrichment; where the lifelong learning needs of people are met by a diverse staff through traditional library services and new methods of information delivery; and where community needs and interests are understood in the planning and provision of all types of library services.
>
> **Our Mission**
>
> The public library offers free and equal access to services and resources to assist the people of Montgomery County in finding ideas and information to sustain and enrich their lives.
>
> **Our Values**
>
> Montgomery County Public Libraries believes in the right of all individuals to learn and to grow. We value intellectual freedom, quality service, diversity, fairness, professional ethics, and respect for our customers, our community, and ourselves.
>
> **Our Key Results**
>
> 1. The library system will provide Montgomery County residents with the current, accurate information that they need for work, school or personal interests.
> 2. The library system will provide Montgomery County residents with the library materials and resources they want when they want them.
> 3. The library system will provide resources to help preschool children develop skills needed to enter school ready to learn.
> 4. The library system will provide quality customer service to all Montgomery County residents.
> 5. The library system will operate in an efficient and effective manner.

In order to maintain its already remarkable reputation, the library system continuously composes self-evaluations to better gauge its effectiveness within the county and surrounding areas. However, there are a few areas within the Montgomery County Library System that it has not evaluated in the recent past. It has looked to this

team to help assess these areas by creating a method of self-evaluation and a way in which to analyze the results of the evaluation. The following is the original letter submitted to WPI by the Montgomery County Library:

Montgomery County Government: Library Services and Satisfaction Assessment

Montgomery County Public Libraries is a department of the Montgomery County (Maryland) government. Montgomery County borders Washington, D.C. and, with a population of over 931,000, is the second largest jurisdiction in the Washington metropolitan area. Montgomery County Public Libraries currently attracts over 6 million visits a year to its 21 branches and circulates over 11 million items. Annually, it plays host to over 5,000 programs.

Over the past several years, budget cuts have led to the abandonment of a number of surveys that Public Libraries used to obtain annual customer feedback and to monitor the performance of key services. In a sense, the organization has "forgotten" how to implement a comprehensive customer satisfaction. Now that staffing levels have improved, Public Libraries would like some help from a team of WPI students in creating, executing, and analyzing a "system" of customer surveys as it tries to re-invigorate this dormant – but important – function. Customer feedback is needed for the following four key areas:

- The materials collection (books, periodicals, etc., and electronic materials like databases)
- The appearance, comfort, and utility of library facilities
- The quality of service provided by the libraries' core services: circulation (check-in/check-out), information, network, and reference services
- The quality of service provided in connection with other (specialized) library programs (e.g. Early Childhood programs)

The WPI student team will be responsible for the following tasks:

- Meet with the Library management and staff (and others, as appropriate) to understand the nature of the programs and services of interest, their customers, and the kinds of information needed from customers to assess service quality and effectiveness. This may include the circulation process, information desk, and information technology services.

- Develop surveys for identified services. The surveys should allow the collection of information on key library performance measures. Prior surveys used by Public Libraries and similar surveys used by the American Library Association (ALA) could serve as models.

- Develop data collection protocols for each survey instrument that will allow easy distribution and collection by the branch libraries, and provide an efficient means for getting the responses back to central administration for tallying. Protocols will include consideration for bilingual surveys, paper formats, and web-based formats. Pilot test the surveys in several branch libraries and (if relevant) on the Library website using the protocols developed. Provide guidelines for data processing, analysis, and presentation.

- Investigate other qualitative assessment tools (like video-based storybook methods) that have potential as powerful presentation methods.

This project is an integral part of the library system's ability to maintain its commitment to their vision and mission statement. In order to follow this mission, the library has created a set of program measures in several areas of the library's performance upon which it can evaluate itself. This project will create a survey tool with which the Montgomery County Library will assess its customers' satisfaction in several key areas of interest. These areas of interest have been tailored to the library system's mission statement, vision, values and key results. With the tool created by this project, the Montgomery County Library System will be sure to uphold its dedication to its mission.

Working with the WPI team on this project are Lennadene Bailey, Eric Carzon, and John Greiner. Lennadene is a member of the business office in the central library branch in Rockville and is in charge of the budget of the library system. Eric Carzon also works out of this central branch and is the Business Manager for the Montgomery County Library System. John Greiner is the Senior Management and Budget Specialist for Montgomery County, Maryland. These three individuals have all been great assets to the success of this project.

7 Appendix B – Survey Distribution and Analysis Instruction Manual

This appendix will take this project's results and recommendations more in – depth to explain how to use this project's final products. Below are the team's recommendations regarding how to distribute, collect, and tabulate the surveys, as well as specific explanations of the usefulness of the question database's nomenclature with regards to future expandability.

Distribution

The paper surveys created by this project are ready to be distributed among the patrons of the several branches of the Montgomery County Libraries. These five surveys on the five key areas of interest should be distributed separately to achieve optimal results. The library should distribute these surveys in a location that is conducive to a high response rate by customers. In addition, the location of distribution of each of these surveys should be relevant to the topic each covers, thus ensuring that virtually any customer handed a survey would be able to honestly complete it with his or her experience fresh in mind. The following are some suggestions for distribution locations for each of the five surveys and the reasoning behind the choice of each location.

Circulation: This survey contains questions regarding the physical condition of library materials, the ease in finding these materials, the time spent waiting in line at the circulation desk, the time spent waiting for inter-library loans or books on hold, and the resolution of library fines. We recommend that this survey be

distributed either at the circulation desk, or immediately after a customer leaves the circulation desk. This will ensure that the customer has had time to experience locating, examining, and checking out at least one material prior to completing the survey. However, the largest problem with distributing the survey at the circulation desk is that the desk is often very busy to the point where the survey would be a hassle to both the circulation librarian and the customer. In addition to being a hassle, this crowdedness at the circulation desk that would be caused by survey distribution would skew results of customer satisfaction of the wait time in line. For this reason, it is recommended that the circulation survey be distributed in some open location close to the circulation desk, between the desk and the exit to the library.

Information Technology: This survey contains questions regarding the physical condition of computers, the availability of computers, the speed of the Internet connection, the usefulness of the computers, and the time limit placed on computer use. Obviously, the most appropriate location to distribute this survey is at the library's computer station. We recommend that the surveys be distributed to computer users as they are using the machines, but that the surveyor stress that the surveys may be filled out and turned in at the customer's leisure. This way, a customer will be encouraged not to decline simply by the fact that filling out the survey would cut into his or her computer time. Due to the relatively slow rate of replacement of computer users, active surveyors need not be present the whole time. The surveyor should circulate the computer area

roughly once every twenty minutes to offer surveys to any new computer users. The time between each pass will, of course, vary depending on the rate of activity at the computer station. This can be left up to the discretion of the surveyor, but it is important to offer the survey to nearly every customer that uses a computer for any significant amount of time.

Information: This survey contains questions regarding the helpfulness of the information desk at the library, the time spent waiting in line at the information desk, the helpfulness of the Ask-A-Librarian service, and the expedience of the Ask-A-Librarian service. As this service is online and over the phone, there is no feasible way to specifically target users of this service with a paper survey. For this reason, questions regarding the service have been combined onto the information survey. To reach customers who have used the information desk, the survey should be distributed at or near the information desk. Unlike the circulation desk, the information desk is usually not excessively busy. Therefore, it would be most convenient to have the information librarian distribute the survey at the desk itself. The most important aspect of this approach to keep in check is the customer's privacy when filling out the survey. If the librarian is nearby and still in the process of helping the customer, the customer may be biased to fill out the survey with completely "very good" or "very helpful" ratings. Therefore it is important to have the survey distributed after the librarian is completely finished helping the customer and to have the survey collected by a different person, most desirably in a different location.

Facilities: This survey contains questions regarding several aspects of the library's general facilities such as appearance, crowdedness, lighting, and hours of operation. This survey also contains questions about language barriers that may be present in the library. As the facilities survey covers such a wide scope of topics, it can be distributed to anyone and everyone that is in the library. Of course, it is better to hand out the survey to customers after they use the library than to hand it to them before they enter. Therefore, we recommend positioning a table near the exit of the library and distributing the surveys as customers walk out.

Programs: This survey contains questions regarding the quality of programs held by the library, the state of facilities provided for the program, and the scheduling of the programs. To properly target customers who have attended at least one program, this survey will be distributed at programs held by the library. We recommend that the program leader hand out the surveys at the conclusion of the program while he or she still has the customers' attention. Having the program leader distribute the surveys will increase the response rate among customers. However, the program leader should leave customers to fill out the surveys and have another person collect the completed surveys. This should prevent any proclivity that customers may have to fill out the surveys with a bias towards all "very good" answers.

It is desirable to only distribute one of these surveys at a time due to the fact that customers will likely not fill out more than one survey if asked. Attempting to distribute all surveys simultaneously can lead to confusion and/or crowdedness in the library. Also, trying to simultaneously run all surveys will most likely prove to cost more time, effort, and resources per completed survey than running each survey at a different time. The only exception to this would be the program survey. Surveys may be distributed at the conclusion of scheduled library programs without interfering with the surveying that is taking place in the library. It should be ensured that any customers filling out surveys have a proper environment to fill them out. This means having a proper writing surface available and the option to sit down. A table with a few chairs and some pens or pencils should be adequate. This is mostly going to be a concern when distributing the facilities, circulation, and occasionally the program surveys.

Question Database

Of course, these surveys can be modified in the future to better suit the library system's needs. This option is left open with the question database. The database is organized with a nomenclature that allows all questions to be sorted by a great number of criteria. Below is a quick synopsis of the nomenclature used in the question database:

Title	Description	Abbreviation
Survey	Facilities Circulation Information Programs Information Technology	F C I P T
Question Nomenclature Number	Identification Number	1,2,3 etc
Version	Question Version	A,B,C etc
Importance	Yes No	Y (Checked) N (Not Checked)
Category	Program Measure Other	PM Oth
Design	Multiple Choice Open Ended	MC OE
Quality	Qualitative Quantitative	QL QN
Response Type	Rating Frequency Simplicity Helpfulness Other	R F S H O

First is the survey type criterion. This describes into which area of interest the question fits. In the future, new surveys in each of the five areas of interest may be compiled by selecting questions based on this criterion.

Next in the nomenclature are the question nomenclature number and version criteria. The nomenclature number is simply a unique number that is assigned to every question that has ever been entered into the database. This number simply provides a final criterion upon which each question's nomenclature can be guaranteed to be totally unique. It has little purpose in organizing questions for survey creation, aside from providing a number on which to randomize questions. The version number was created for the purpose of future revisions to the questions in the database. This project has produced questions, both used and unused, that are all currently version "A." If questions

are to be revised, they will simply be added to the database and the version criterion changed. This way, a history of all questions written for the customer satisfaction surveys may be stored in the database.

The next criteria in the nomenclature are importance and category. The importance criterion is a yes or no criterion that signifies whether the question is currently in use on the surveys. This Boolean variable can be changed in the future to represent the state of surveys that are currently in use. A "yes" or ☑ signifies that the question is being used on a survey. A "no" or ☐ signifies that the question is not currently being used on a survey. The category criterion is very similar to the importance criterion but is more specific. A category description of "PM" means that the question is a program measure. These questions should be included on all surveys, so they will always be checked as important as well. A category description of "Oth" means that the question is an "other," or not a program measure. This, however, does not mean that the question is not labeled as important.

The final three criteria describe the structure of the question itself. First, the design describes the question as either multiple-choice or open-ended. This can be used to create surveys in the future if even shorter surveys are desired and open-ended responses are not deemed important. Next, the quality criterion describes the question as either qualitative or quantitative. This may be useful in the future if quantitative data becomes desirable. As it stands in this project, no quantitative questions have been used on the surveys. The final criterion in the nomenclature is response type. This describes what type of response choices correspond with each multiple-choice question. All open-ended questions are in the "Other" category. As the nomenclature stands now, all

quantitative questions are also listed as "Other." If, in the future, more questions are added that require a wider variety of response types, these may be added to this criterion.

Input and Data Analysis

As surveys are being collected, they can be input to the database for analysis. The input form is designed to be straightforward and easy to use. When the user selects the input form, he or she is first prompted to select which survey is to be input: Circulation, Facilities, Information, Information Technology, or Programs. The survey type should be made to correspond to the bold, underlined title at the top-center of each survey. Clicking the proper button will take the user to a form that corresponds to the chosen survey type. At the top of the input form are drop-down menus to select the branch and a field to enter the date. The branch and date information can be found on the top of the survey form that is to be inputted.

Two drop-down menus make up the subform below the branch and date fields. The menu in the left column contains a list of all questions on the survey while the menu in the right column contains all possible responses to the survey questions. To input a survey, simply select the proper response next to each corresponding question. For questions that have been left blank on the survey, make sure to select the "Don't Know" option from the drop-down menu. In addition to the multiple-choice questions, the open-ended questions are also in the drop-down menu. The replies to these questions can be entered in the text field to the right of each corresponding question.

Once all question responses have been entered for a survey, the "Add Record" button on the right of the form may be pressed to send that survey's results to the

database. Once this button is pressed the subform will be automatically cleared and the next survey may be entered. If the branch, date, or survey type is different for this next survey, then these fields should be updated. Otherwise, these fields will remain the same as the last survey entered and the next survey may be inputted.

All of the data for each of the survey types is dumped into each of five unique tables. These five tables store all of the data that will be collected with these surveys. As of the completion of this project, these tables need to be manually exported to Excel for data analysis. In the future however, this exportation from the Access database to the Excel analysis tool will be automated. For now, each table will need to be manually exported as an Excel file and have its data dumped into the proper analysis file. There are five Excel analysis files, one for each of the five areas of interest. In each of these files exists a worksheet titled "Raw Data" into which the data can be pasted. Once the data is pasted, the analysis occurs automatically and results can be seen on the other worksheets.

8 Appendix C – Surveys

Date:	Branch:

Circulation

Please circle your answers for Questions 1-5

1. **How would you rate the condition of the following materials?**

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
Books	5	4	3	2	1	0
CDs	5	4	3	2	1	0
DVDs	5	4	3	2	1	0
Newspapers	5	4	3	2	1	0
Children's Books	5	4	3	2	1	0

2. **How easy was it to find the materials you were looking for (on the shelf, library catalog, etc.)?**

Very Easy	Somewhat Easy	Average	Somewhat Difficult	Very Difficult	Don't Know

3. **How would you rate the availability of materials that the library offers?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

4. **How would you rate the time it took to obtain materials using the Inter-Library-Loan, putting books oh hold, etc.?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

Please Continue on Reverse Side ⇨

5. **How would you rate the time you waited in line at the circulation desk today?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

6. **How can the library improve its circulation of materials?**

7. **How well do you feel library fines are resolved?**

8. **What materials could be added to make the library more useful to you? (Newspapers, Books, Videos, etc.)**

Age:	Under 13 **O**	13-17 **O**	18-34 **O**
	35-49 **O**	50-64 **O**	65+ **O**

Gender:	Male **O**	Female **O**	

Ethnicity:	White **O**	Hispanic/Latino **O**	Asian/Pacific Islander **O**
	Black/African American **O**	American Indian/Alaskan Native **O**	Other **O**

Date:	Branch:

Facilities

Please circle your answers for Questions 1-3

7. How would you rate the facilities of the library in the following areas:

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The hours of operation	5	4	3	2	1	0
The appearance of the exterior	5	4	3	2	1	0
The temperature	5	4	3	2	1	0
The noise	5	4	3	2	1	0
The cleanliness	5	4	3	2	1	0
The crowdedness	5	4	3	2	1	0
The lighting	5	4	3	2	1	0
The parking	5	4	3	2	1	0
The restrooms	5	4	3	2	1	0

8. How easy was it to find your way around the library?

Very Easy	Somewhat Easy	Average	Somewhat Difficult	Very Difficult	Don't Know

9. How often did you experience problems or delays because of language barriers?

Almost Always	Often	Sometimes	Seldom	Never	Don't Know

Please Continue on Reverse Side ⇨

10. What problems, if any, did you experience because of language barriers?

11. Do you feel that any of your expectations regarding the facility were not met? Please Explain.

12. How could the facilities be improved?

Age:	Under 13 **O**	13-17 **O**	18-34 **O**
	35-49 **O**	50-64 **O**	65+ **O**

Gender:	Male **O**	Female **O**	

Ethnicity:	White **O**	Hispanic/Latino **O**	Asian/Pacific Islander **O**	
	Black/African American **O**	American Indian/Alaskan Native **O**	Other **O**	

Date:	Branch:

Information

Please circle your answers for Questions 1-5

7. **How would you rate your overall experience at the information desk?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

8. **How would you rate the time it took you to receive an answer from the Ask-A-Librarian telephone and e-mail service?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

9. **To what extent has the Ask-A-Librarian telephone and e-mail service been helpful to you?**

Very Helpful	Somewhat Helpful	Not Very Helpful	Not Helpful At All	Don't Know

10. **How helpful was the information you received at the information desk?**

Very Helpful	Somewhat Helpful	Not very Helpful	Not Helpful At All	Don't Know

11. **How would you rate the time you waited in line at the information desk today?**

Very Good	Good	Fair	Poor	Very Poor	Don't Know

12. **How do you feel the information desk service could be improved?**

Please Continue on Reverse Side ⇨

Age:	Under 13 **O**	13-17 **O**	18-34 **O**
	35-49 **O**	50-64 **O**	65+ **O**

Gender:	Male **O**	Female **O**	

Ethnicity:	White **O**	Hispanic/Latino **O**	Asian/Pacific Islander **O**	
	Black/African American **O**	American Indian/Alaskan Native **O**	Other **O**	

Date:	Branch:

Information Technology

Please circle your answers for Questions 1-3

7. How would you rate the library's computer technologies in the following areas:

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The physical condition of the computers	5	4	3	2	1	0
The speed of the Internet connection	5	4	3	2	1	0
The usefulness of the computer software	5	4	3	2	1	0
The time limit for computer use	5	4	3	2	1	0

8. How often are you able to find an available computer when you need one?

Almost Always	Often	Sometimes	Seldom	Never	Don't Know

9. How often did the internet connection satisfy your needs?

Almost Always	Often	Sometimes	Seldom	Never	Don't Know

10. How could the computer facilities or network be improved?

Please Continue on Reverse Side ⇨

11. What do you use the internet for at the library (research, entertainment, etc.)?

12. If you use a laptop, how easy was it to connect to the wireless network?

Age:	Under 13 **O**	13-17 **O**	18-34 **O**
	35-49 **O**	50-64 **O**	65+ **O**

Gender:	Male **O**	Female **O**	

Ethnicity:	White **O**	Hispanic/Latino **O**	Asian/Pacific Islander **O**
	Black/African American **O**	American Indian/Alaskan Native **O**	Other **O**

Date:	Branch:

Programs

Please circle your answers for Questions 1-4

1. **How would you rate the program in the following areas:**

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The usefulness or educational value	5	4	3	2	1	0
The entertainment value	5	4	3	2	1	0
The overall quality	5	4	3	2	1	0

2. **How would you rate the program's facilities in the following areas:**

	Very Good	Good	Fair	Poor	Very Poor	Don't Know
The temperature	5	4	3	2	1	0
The noise	5	4	3	2	1	0
The cleanliness	5	4	3	2	1	0
The crowdedness	5	4	3	2	1	0
The lighting	5	4	3	2	1	0

3. **To what extent do programs you wish to attend meet your schedule?**

Almost Always	Often	Sometimes	Seldom	Never	Don't Know

4. **How often do you attend library programs?**

Almost Always	Often	Sometimes	Seldom	Never	Don't Know

Please Continue on Reverse Side ⇨

5. **How many times in the past thirty days have you attended a library program?**

6. **How would you improve the program you attended?**

7. **How did you hear about this program?**

8. **Would you recommend the program to others? Why or why not?**

Age:	Under 13 **O**	13-17 **O**	18-34 **O**
	35-49 **O**	50-64 **O**	65+ **O**

Gender:	Male **O**	Female **O**	

Ethnicity:	White **O**	Hispanic/Latino **O**	Asian/Pacific Islander **O**
	Black/African American **O**	American Indian/Alaskan Native **O**	Other **O**