DOCUMENT RESUME

ED 401 923 IR 056 198

AUTHOR Popovich, Donna
TITLE The Effects of Computer Anxiety and Technostress, as Functions of Resistance to Change, on the Staff of the 18 Founding OhioLINK Libraries as the OhioLINK Automated System Is Initiated.
PUB DATE Nov 94
NOTE 57p.; Master's Research Paper, Kent State University.
PUB TYPE Dissertations/Theses - Undetermined (040) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Change; *Computer Anxiety; *Computer Attitudes; Information Technology; *Library Automation; *Library Personnel; Library Surveys; Questionnaires; Technological Advancement
IDENTIFIERS *OhioLINK; *Technostress

ABSTRACT

This descriptive study surveys the staff of all 18 founding member libraries of OhioLINK to see whether or not they prefer the new system or the old one and why. The purpose of the study is to determine if resistance to change, computer anxiety and technostress can be found in libraries converting their automated systems over to the OhioLINK Innopaq system. Of 114 questionnaires, 78 were returned. Participants in this study consisted of staff, with and without an MLS, who worked with the library system on a daily basis. By comparing stage of implementation to respondents' choice of system, the level of implementation of the respondents' libraries is compared to their attitudes about changing to OhioLINK and then analyzed. Stage of system implementation and attitudes toward OhioLINK are examined to determine if the symptoms of technostress are less prominent among staff in libraries that are near the final stages of system implementation. Finally, level of staff participation, including training on the systems, views of this training, and participation in library committees dealing with issues of OhioLINK are examined along with the respondents' preferences of library systems to determine if involvement of staff members affects their acceptance of OhioLINK. Results suggest that computer anxiety and resistance to change were not factors in converting to OhioLINK. Some symptoms of technostress were found to decrease as the implementation of OhioLINK progressed until the system was fully operational and connected to central site. Appendices include the questionnaire and cover letter; the collection size, staff size, and automated systems in use before OhioLINK, by library; research application; and seven tables depicting results. (Contains 30 references.) (AEF)

THE EFFECTS OF COMPUTER ANXIETY AND TECHNOSTRESS, AS FUNCTIONS OF RESISTANCE TO CHANGE, ON THE STAFF OF THE 18 FOUNDING OHIOLINK LIBRARIES AS THE OHIOLINK AUTOMATED SYSTEM IS INITIATED

A Master's Research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Donna Popovich

November, 1994

ABSTRACT

Many papers and studies have been done on the resistance to change in libraries when the libraries were changing from a manual catalog system to an automated information system. Today we are faced with new technologies and new generations of library information systems. This study's purpose is to determine if resistance to change is still prevalent today, like in the past, but now, the systems being replaced are older automated information systems with new ones. A questionnaire was designed to determine if there was a relationship in the above mentioned variables as OhioLINK was implemented. Of the 114 questionnaires, 78 were completed and returned. The participants consisted of staff, with and without a MLS, who worked with the library system on a daily basis. Results suggested that computer anxiety and resistance to change were not factors in converting to OhioLINK. Some symptoms of technostress were observed to decrease as the implementation of OhioLINK progressed until the system was fully operational and connected to central site. There an increase was seen in anxiety, headaches and happiness.

Master's Research Paper by

Donna R. Popovich

B.A., The Ohio State University, 1989

M.L.S., Kent State University, 1994

Approved by

Adviser_____ Date_____

ACKNOWLEDGMENTS

I would like to thank all those who provided support and guidance on this project. Sincere gratitude to my advisors Dr. Carl Franklin and Dr. Rubin for their support of my project. Extreme thanks to Dr. Sara Fine for her assistance in lending me her report. Thank you to the directors of the libraries that participated in my survey. My deepest appreciation and love to my parents, Donald and Wanda Popovich, and my brothers, Donald and Stephen Popovich. Thanks for the support and the push to keep going when I did not think it was possible. Thank you to WRT, for helping me to keep sane throughout the dark days and nights. And finally, to DRP, all my love and thanks. Thank you for believing in me and helping to chase the doubts away. Your constant encouragement and love is the beacon that has guided me on my way throughout everything.

Table of Contents

LIST OF TABLES

CHAPTER 1

Introduction

> While technological mechanisms for making today's libraries responsive to today's societal demands are already available, the psychological defense mechanism of the human beings who will be affected by these innovations are *also* already available. Human beings tend to resist change, even when change represents growth and development; human organizations tend to resist change and its turmoil, even when it represents greater efficiency and productivity. Changes in an organization affect the individuals within that organization, and individuals-consciously or unconsciously-in turn have the power to facilitate or thwart the implementation of an innovation.
> (Fine 1986)

As often is the case, necessity is the mother of invention, or at least in this case innovation. With the increasing costs of materials for library patrons and staff use , increasing costs of constructing sites to house the increasing materials, and the shrinking budgets of the state university libraries in Ohio, something had to be done. The Ohio Board of Regents came up with the idea of OLIS, the Ohio Library Information System. As the Board noted in its report:

> The Library Study Committee was appointed by Chancellor William B. Coulter in 1986 to make recommendations on how the State could respond to the rising number of requests for new library facilities. Although the committee's principal focus was on the question of facilities and on library storage, its charge provided for the examination of any option to a recommendation for the adoption of remote storage, the committee recommended that "the State of Ohio implement as expeditiously as possible a statewide electronic system."
>
> In response to this recommendation, the Board established a Steering Committee representing librarians, faculty, administrators, and computer systems managers from campuses throughout Ohio. The Steering Committee created three task forces to report to it: one on the users' view; one representing the librarians' view, and the final task force presenting the system managers' view. Through meetings, public hearings, and conferences, the Steering Committee subsequently prepared and distributed a planning paper (November 1988); an RFI, Request for Information, (February 1989) and an RFP, Request for Proposals, (August 1989) for the OLIS system. Separate but integrated projects for workstation hardware and software and for the communications network are under development as well.
> (Ohio Board of Regents, December 1989)

The system's name was later changed, from OLIS, to OhioLINK.

> From the responses to RFP in 1989, Innovative Interfaces, Inc. of Berkeley, CA. was chosen to design the software system for OhioLINK. Besides this agreement, OhioLINK also made and agreement with the Ohio Academic Resources Network (OARnet) to provide the network connections between the OhioLINK libraries, the central facility at Wright State University, and the Internet. (OhioLINK, October, 1992)

Changing to a new computer system can be exciting and at the same time terrifying. How the staff of the libraries approach it influences the success and acceptance of the system. Some OhioLINK founding member libraries are switching from different systems, which were manual systems, home grown, or from other vendors, and changing to the Innopaq system, developed by Innovative Interfaces Inc. A few of the libraries had been using Innovative's Innovaq system for serials, so they where already familiar with some parts of the new system. Changing systems can cause problems for staff. Anxiety may occur, because the new system being introduced is new and different from the library's old system. It may not have the nuances the old system had or it may have new options which for some seem overpowering. Some of the staff may look forward to these changes while others may resist the innovations happening around them.

Also, since the libraries are not all coming from the same background, size, and technical implementation, some of the staff may show greater levels of anxiety and stress than exhibited in staff members from other libraries that are more automated. The reason for looking at the 18 OhioLINK libraries to see if there are any symptoms of computer anxiety, resistance to change and technostress is because eventually more academic libraries will join OhioLINK. Future members will include libraries of different sizes and in varying stages of automation. If the symptoms do exist in the founding members, they may exist in future members also. Knowing ahead of time what problems and opposition to the system they may encounter from the staff may give the administrators of the libraries a chance to plan and look for the symptoms to occur at their libraries.

This descriptive study will survey the staff of all 18 founding member libraries of OhioLINK to see whether or not they prefer the new system or the old one and why. It will determine if there is a "security blanket" or "hometown" effect associated with the first computer system a person uses. Will the person always be loyal to the first system they learned even after they learn another system's command structure ? (Shuman, 1992) The appearance of computer anxiety and/or resistance to change, and if it affects the staff's perception of the use and benefits or

downfalls of the new system, will also be studied. The limitations of the study include that results may not apply to non-OhioLINK libraries.

DEFINITIONS

OhioLINK has had three name changes since its conception (Sessions, 1992). In 1986, when planning began for the system, it was known as OLAS, the Ohio Library Access System. The name was then changed to OLIS, the Ohio Library Information System, and then finally to OhioLINK.

OhioLINK:

> OhioLINK, Ohio Library Information NetworK, is a growing consortium of 15 state university libraries, two private university libraries, and the State Library of Ohio, that has linked together to create a single electronic catalog and a statewide library circulation system in an effort to expediate access to the vast array of Ohio's research resources for faculty, students and other library users.
> (OhioLINK, 1992)

Technostress:

Technostress is a type of psychological pressure a person experiences. Brod (1984), who may have coined the term, defines technostress as:

> a modern disease of adaption caused by an inability to cope with new computer technologies in a healthy manner. It manifests itself in two distinct and related ways: in the struggle to accept computer technology, and in the more specialized form of over identification with computer technology.

Computer Anxiety

The "computer anxiety" interest in technostress is defined by Brod(1984):

> The primary symptom of those who are ambivalent, reluctant, or fearful of computers is anxiety. This anxiety is expressed in many ways: irritability, headache, nightmares, resistance to learning about the computer or outright rejection of technology. Technoanxiety most commonly afflicts those who feel pressured--by employer, peers, or the general culture--to accept and use computers.

Resistance to Change:

Reluctances to accept new or different technology in the place of existing technology.

Research Objectives and Hypotheses

The research questions to be investigated in this study are the following:

1. Will the library's level of implementation be related to staff attitudes toward changing library systems? (i.e., Will the staff have more favorable attitudes toward OhioLINK the further along they are in the implementation process their libraries are in?)

By comparing stage of implementation to respondents' choice of system, the level of implementation of the respondents' libraries will be compared to the respondents' attitudes about changing to OhioLINK from their previous systems. This will be analyzed to see if the staff of the libraries in the beginning phases of implementing OhioLINK are more likely to be reluctant, or are willing to change from their present system to the new one. Also, the staff in the final stages of implementation will be studied to see if, after using the system, would they want to return to their old system.

2. Will the effects of computer anxiety, technostress, and resistance lessen as the libraries progress with their implementation?

Will the staff become more at ease and comfortable with the OhioLINK system the longer they use it? Stage of system implementation and attitudes toward OhioLINK will be examined to see if the symptoms of technostress are less prominent among staff in libraries that are near the final stages of system implementation.

3. Will the level of individual staff participation in the implementation of the new system correlate positively with the individual's acceptance of the new system?

Level of participation of the staff including, training on the systems, views of this training, participation in library committees dealing with issues of OhioLINK (such as, site preparation, and

circulation), will be examined along with the respondents' preferences of library systems to see if the more involved the staff members are, the more accepting of OhioLINK they will be.

SUMMARY

OhioLINK came about as a solution to a problem with the rising cost of storage and costs of materials of the academic libraries in Ohio. The Ohio Board of Regents came out with a recommendation, in 1987, of pulling the resources of the libraries together. OLAS, Ohio Library Access System was born. The name would change next to OLIS, Ohio Library Information System, and finally to OhioLINK, Ohio Library Information Network. There are currently 18 member libraries, seventeen universities and the State Library of Ohio. Future plans for the system call for the addition of the two-year technical school and community colleges to join the system.

The purpose of this study is to determine if resistance to change, computer anxiety and technostress can be found in the libraries converting their automated systems over to the OhioLINK, Innopaq system. Resistance to change is a part of human nature as Dr. Fine has stated. How people react to the anxiety, change and technostress, may vary from being overly happy about changing to the new system, very open about disliking the system, or, by all of their power aimed at, helping to undermine the system any way possible.

CHAPTER 2

Literature Review

Most of the literature on resistance to change deals with the change from a manual system to an automated system not from automated system to automated system (Baker, 1979; Fine, 1979; and Olsgaard, 1989). Nonetheless, these older studies are important, because they give some examples of why people resist change and what was done in the past to make the transition smoother. With the increasing advances in automated systems, libraries are converting from an older automated system to a new second generation system. Literature is appearing discussing the impact of changing to a new automated system (Scharf and Ward, 1989, and Saunders and Kwon, 1991).

Staff participation is essential for the automation transition to be successful. A study conducted at the Indiana State Library (Shaw, 1986) gave the staff surveys a year apart and asked them what their attitudes toward automation were. By comparing the responses of the two surveys, it indicated that the staff became more positive about the automation process by the second survey. The staff felt they had been given more information about the process and were more comfortable with the automation process when the second survey was given.

Another study looked at the perception and opinions of library support staff toward automation (Jones, 1989). The support staff at three libraries across the United States (University of California, Northern Illinois University, and University of Richmond) were given twenty-five multiple choice questions on automation and technology and asked to mark the best answer for each question. The library and staff size varied among the three libraries used in the study. Students at the universities varied from approximately 4,700 to 24,300 students. The staff size ranged from 39 to 149. Of the 267 surveys sent out, 133, or 50% were returned. The response rate was close to 50% for each library (58%, 51%, 45%). Jones only uses statistics as indicators in this study. She states "There are always unseen and unknown factors present within the populations surveyed, and every human mind which applies itself to the survey questions will include nonmeasurable and uncalculated interpretations of the questions in its responses."(p. 433).

The origin, reliability and validity of the questionnaire used by Jones was not discussed in the paper. Because of this, the survey included with Jones' study was not used in this study. There is no way to be certain it would be a useful tool, unless it were tested for reliability and validity . The survey was looked at though to compare to other surveys to see how similar the questions were, and if they could be used, or retooled to be used, in this research project.

Some of the questions asked required only one answer, while several let the respondents give multiple responses. The twenty-five questions that concerned technology in the workplace were followed by a page of personal questions such as educational background and library experience. The individuals were told in the cover letter that came with each questionnaire that their answers were kept anonymous, so that the would be no negative reflection on any library.

> Of the individuals who responded to the survey, The overall results indicated an exceedingly positive attitude toward technological change by the library support staff, even though there is a strong undercurrent of personal frustration and irritation. There is evidence of an intense desire to learn and to fit into the rapid flow of new technology. Judging from the kinds of responses given to the questions, it seems that academic librarians and administration should feel confident that the work assigned to support staff will get done and the transition to automation will be made in spite of concerns about health or about the human personality and its ability to handle stress or maintain traditional patterns of social interaction.
> (Jones, 1989)

The questionnaire used in Jones' survey did not measure motivational or causal factors that were behind the attitudes. The author does say that, although positive attitudes can help deal with stress caused by the new situation, they can also be used as a mask to hide the fear and confusion that the staff is really experiencing. Staff may exhibit positive attitudes toward the automation process in order to move ahead at work. They may also lose sight that others, both staff and patrons, may have problems using and adjusting to the new technology. The staff should have a positive attitude toward the automation process, but also realize that there will be problems with the equipment and with the education process. Jones believes that positive progress will be made if these problems are accepted as real and dealt with through careful and thorough education.

Another study, by Albritton and Siecert (1984), looked at computer anxiety of library staff

members and its effects on the staff's level of participation in a computer literacy program and the staff's attitudes toward library automation and computers in general. The Computer Opinion Survey (Maurer and Simonson, 1984) was given to 61 volunteers from the University of Missouri-Columbia Libraries. Besides the information from this study, other variables that were considered significant from other studies were gathered in staff interviews. The sample was then divided into two groups, those who attended most of the in-service computer literacy workshops and those who attended few or none. The relationship between computer anxiety and several background variables was tested with ANOVA. No significant relationship was shown between computer anxiety and age, gender, education, position in library, prior experience at another library, and access to computers outside the library. Previous hands on experience with computers did influence library staff member's computer anxiety ($p=.05$). The use of computers in present positions was influential also ($p=.01$). Variables of computer anxiety that were library specific included: department ($p=.02$), years working in libraries ($p=.01$), and experience with the library's online catalog ($p=.004$).

The results suggested that although the staff may show levels of computer resistance, they are ready for staff development in computer technology. The results also suggested the following for this library:

> 1) An unwillingness to learn about computers and computer operations is not related to negative attitudes or beliefs about computers, and
>
> 2) Resistance to computer technology is not a function of personal characteristics nor demographics.
>
> Whatever fears, attitudes, beliefs or values library staff have, they are willing to learn about new technology. Positive attitudes may indeed increase the prospect of achievement and negative attitudes may make achievement of competency less likely, but these attitudinal differences may not determine an individual's decision to seek computer knowledge and training.
> (Albritton and Siecert, 1984)

Another factor for resistance to change is technostress caused by the change in automated

systems. Technostress is a type of psychological pressure a person feels he is under. Brod (1984), who may have coined the term , defines technostress as:

> a modern disease of adaption caused by an inability to cope with new computer technologies in a healthy manner. It manifests itself in two distinct and related ways: in the struggle to accept computer technology, and in the more specialized form of over identification with computer technology.

Brod explains that there is a very fine line between successful adaption to computers and technostress. The personal and situation factors in adapting to computers determine if the individual will be successful or suffer technostress.

> Unfortunately, the wholesale, rapid computerization of our society has created an enormous and sudden need to adapt to new lifestyles, relationships, and routines. The everyday problems that people normally experience--marital disputes, loneliness, job dissatisfaction, boredom--are aggravated in a world where computers increasingly substitute for humans. The resulting tension not only changes personality and behavior, but pushes us beyond the threshold of manageable stress. We are basically creatures of change. As children we experience a tremendous rate of change and are not really stressed by it; in fact, it enhances our psychological growth. As adults we seek novelty in our work and in our personal lives. Technostress is not simply an expression of our resistance to change. It is a reaction to the content of that change.
> (Brod, 1984. p.22-23)

A study by Bichteler (1986) looked at technostress in special libraries. The paper discusses the phenomenon of technostress caused by physical discomfort from using a terminal, and changes in the job because of the computer's introduction into the processes of the job. Introduction of new computer systems may appear threatening to the employees. Minor changes caused by the computers may be viewed as an attempt to change the current shape of the organization.

Bichteler uses Moran's classification based on two dimensions: user knowledge, determination if the user is new to the system or an expert; and, task structure, the types of tasks the user does on the system. By using this classification a distinction may be made between programmers and nonprogrammers. There were 32 individuals interviewed, who were selected from the membership of online user groups, or recommended by library managers and personal acquaintances. Questions asked covered the following topics: personal data, physical health, the nature of the job, psychological and social aspects, and computers and management. The

questions were open ended and participants were free to add comments. The data were then analyzed for problems and evidence of technostress.

The results of the study were that of the 32 participants, 29 (91%) were considered expert users and 3 novices. Based on Moran's distinctions of task structure, 3 were programmers, 29 were nonprogrammers. The major source of technostress found among those interviewed was inadequate training on hardware and software. The reasons noted for this is that documentation is incomplete and misleading, while enough time is not allotted for the staff to study the documentation. The staff feels frustration and anger, which reduces their effectiveness at work. Bichteler concludes that training should be thought of as being as important as software and hardware in special libraries.

SUMMARY

Since the introduction of automated systems, resistance to change, technostress and computer anxiety have been mentioned in the library literature. In the beginning, it was the staff's acceptance and adjustment from the manual card catalog to the automated system. Today, it is the acceptance and adjustment from leaving the first generation automated systems and learning and using the second generation. The lessons of what was written on changing to the first automated systems are still valid and usable on today's new generation of systems. The problems encountered before are now appearing again. The older literature should be looked at as a guide and/or a source to help overcome these problems while they are small, before they get out of hand.

CHAPTER 3

Methodology

The survey instrument used was a questionnaire (Appendix A). The questionnaire was created by the researcher. The composition of some of the self administered questions may resemble those of the previous studies mentioned. The questions regarding the respondents attitudes toward technology and change (Fine,1979) were looked at and modified, if needed, for inclusion in this questionnaire. The questions that are original, are the ones specifically on OhioLINK. These are questions covering the stage of implementation, training, technology, individual participation in planning groups or committees, and the respondents' attitudes toward changing to OhioLINK.

Stage of implementation is important because it is one of the key variables used in this study. Other variables such as acceptance of the new system and symptoms of technostress are compared with stage of implementation to see if there are tendencies associated with each stage.

Training questions came about because, at least in the researcher's library, there were training sessions given to most staff members that work in the public services area, i.e., circulation, interlibrary loan, reference, and government documents, as well as, the technical services department. The researcher was trying to determine if there was training sessions at the other libraries and how the respondents felt about them.

Some of the questions ask the respondents their opinion of the OhioLINK system. These questions were decided upon by observing others in the researcher's library while the library was planning to install OhioLINK. Other questions probed the following areas: (1) the use of technology, light pens and bar codes; (2) the changing command structure from the old system to the new; (3) respondents' opinion if OhioLINK will help improve their jobs. (4) the respondents opinion of usefulness of the system; (5) the respondents' opinion on changing to OhioLINK. There is also a free response question were the respondents can give their individual opinions about OhioLINK. The respondents are informed on the cover letter enclosed with the questionnaire

that this is an anonymous questionnaire. The information will in no way be broken down into individual libraries.

The questions on committees were designed to see if there was staff involvement in the implementation of OhioLINK. They were also designed to see if that there were committees, what did the respondents think of their usefulness, and were the respondents involved in any committees. These questions were also compared to the respondents' system preferences to see if there was a relationship between involvement in planning committees and willingness to change to OhioLINK.

Demographic information about the respondents were also included in this study. These questions were formed in order to see if there were any relationship to these and computer anxiety, technostress, and resistance to change. They were included in this study to help determine what the make up of respondents were. (Albritton and Siecert, 1984, do say these are not necessary in their research. Since most studies looked at did include demographic information, it was included in this study also.)

A survey done by Time magazine (1971) was the source for one of the questions included in the questionnaire (question 19). The question was one of many asked on the subject of the public's attitude toward computers. This question was grouped under the section on "beliefs about computers". This question was added to the survey to get an idea of the respondents beliefs about computers.

The following questions come from a survey done in 1979 by Dr. Sara Fine. These questions covered topics such as technology and resistance to change, which the researcher had planned to create before seeing the survey. Some of the included questions deal with technology (Question 8-10, and 12). They were added to the questionnaire to see how the respondents felt about technology. Others were chosen to see if the respondents' opinions of where they work have any influence on their opinion on technology, and/or OhioLINK (Questions 13, 17, 18, and 20) .(Question 17 did not have an "i" choice in the original questionnaire. It was added by the researcher

after the questionnaire had been pretested.)

Questionnaire Pre-testing

In February of 1994, a trial questionnaire was administered to the library staff at Ohio Dominican College. This library was chosen because it was an academic library. The questionnaires were collected and reviewed. Problems found were corrected. Problems found included the wording on some of the questions and the addition of the" none of the above" answer for question 17. The field test of the questionnaire was not capable of determining the validity and reliability of the questions in the questionnaire that are asked specifically about the OhioLINK system, because all of the libraries who are implementing the system are in the process of change, therefore in unstable environments that disqualify them from being used in the field test.

Final Questionnaire

Since the libraries included in this survey, sizes, staff and systems all varied, Appendix B, an attempt was made to obtain random samples of all the staff of the 18 libraries as well as their branches. The director of each of the selected universities was called and was asked for permission to distribute questionnaires to a random sample of their library staff. Each director was informed that the staff was under no obligation to complete the survey and that anyone could discontinue participation at any time. On the initial contact one director did not wish to participate, so that library was dropped from the study and the staff size was not included in the sample. The sample size was estimated by using the American Library Directory 1993-94. The staff size was determined for each library by adding the numbers of professional and clerical staff together for each library. When the total approximate staff size was found for each library, 10% from each library, chosen by random sample, were sent questionnaires. The random sample for the libraries that did send staff rosters was determined by using a random number table. A random number was chosen and the researcher went down the rosters and chose the names on the lists that corresponded with the number. For the libraries that the researcher did not have rosters, a random

number was again chosen for each and directions were included with the questionnaires for the directors, or the designated staff members, to pass out the questionnaires to every "nth" staff member on their rosters. ("Nth" being the random number chosen.) A total of 156 questionnaires were sent out. (In error, one library's staff size was calculated incorrectly. Student staff was added to the number.)

The cover letter, enclosed with the questionnaires, explained that this was a confidential survey. That the statistics were not broken down in any way that may identify how each individual participant answered. This survey was done following the Kent State University Human Subject guidelines. The approval page, for anonymous questionnaires for adults only, is available in Appendix C. Envelopes with postage and addressed to the researcher's home was included with each survey.

After the questionnaires had been sent out, some of the directors' did not approve of the instrument being used, and asked that their libraries be removed from the study, included in this group was the library that the mistake on the number of questionnaires sent was made. The total number of questionnaires that could be accounted for by their removal was 42.The final sample size was, therefore, 114.When the completed questionnaires were received, they were entered into a database in Microsoft Works for the Macintosh. The data were checked and imported into Systat, a statistical software package. Statistics ran included, frequencies of answers, mean, mode, and median.

CHAPTER 4

DATA ANALYSIS

The data analyzed in this section comes from the questionnaires that were returned to the researcher. After a follow up letter was sent 3 weeks later, a total of 78 questionnaires were received answered. The return rate was 68%. The 36 missing questionnaires from the final sample size were not included in the tabulation of the statistics of the questionnaire answers. Table 4-1 summarizes pertinent data about survey respondents (Tables are located in Appendix D). With this data, a sketch can be made of the composition of the group. The average age of the respondents is between 40 to 49. No respondents were under 18. Seventy-eight percent of the respondents were female. While the mean for education was a bachelors degree, 46% of the respondents reported they had a masters degree. The group mean for computer experience was 6 to 15 years. Only 1% of the respondents had 20 or more years of computer experience. Twenty-four percent of the respondents had worked in the libraries for 1 to 5 years, while another 24% had worked in libraries for 11 to 15 years. Forty percent of the respondents were in library support staff positions, while 23% were librarian-degree positions. Twenty-seven percent of the respondents worked in the technical services department. Twenty-two percent worked in circulation, while another 22% worked in various other departments within the library, such as, special collections, stacks management and preservation.

Data from various other questions were then analyzed and compared to determine the answers to the following research questions. The first question investigated was:

Will the library's level of implementation correlate with staff attitudes toward changing library systems?

Respondents' attitudes toward implementing OhioLINK were compared to the stage of implementation. From Table 4-2, the attitudes of the respondents can be evaluated. Of the 35% of the total respondents with fully operational systems, 88% responded that they would change to the

OhioLINK system. Of the 11% of the total respondents with local systems operational only, 50% would change to OhioLINK. Of the 36% of the total respondents who were reviewing the test databases, 68% chose changing to OhioLINK. Of the 7% of the total respondents who were in the planning equipment and software needs stage, 60% would change to OhioLINK. And, 11% of the total respondents who did not know what stage their libraries were in, 12% would change to OhioLINK. From these figures it can be suggested that as the respondents approach the final implementation stage, they are more positive towards implementation, until they reach the local system operational stage. There respondents are not as positive about changing to OhioLINK as they were in the database reviewing stage. The positive attitude drops from 73% in the database reviewing stage to 50% in the local system stage then shoots up to 88% in the fully operational stage. The drop could be caused by changing from their old system to a new one. Twenty-five percent of the respondents in the local system stage wanted to keep their old system, 12% wanted to change to a different system and 12% did not know what system they wanted. This could also be caused by the number of respondents who were in this stage. Only 8 respondents were in the local system stage. To see if this is a valid trend, more respondents in this stage would need to be surveyed.

Will the effects of computer anxiety, technostress, and resistance lessen as the libraries progress with their implementation?

Comparing the stage of implementation to the emotions the respondents felt when they heard about OhioLINK, some patterns do emerge as seen in Table 43. Between 50% to 76% of the respondents from every stage were excited about implementing, except for the respondents who did not know what stage they were in. Among the latter, only 14% were excited about implementing OhioLINK. Thirty-two percent of the respondents with systems fully operational, 25% with local systems operational only, 24% with test databases being reviewed, 60% in the planning stages and 43% who did not know what stage were nervous about implementing. It can

be surmised that nervousness does begin to decrease as the respondents begin to work with the system more. The increase that occurs from the local system stage to the fully operational stage may be caused by the implementation of the system completely or from other external or internal factors that were not researched.

Headaches seemed to decrease among respondents between the planning stage, 20%, and the test database stage, 8%. They began to increase when the local system was operational ,13%, and when the system was fully operational, 16%. It is not known if the headaches were caused by the same problems in every stage. It is possible that the headaches were caused by increased technological options that the respondents had as the system was implemented first locally then statewide.

Anxiety fluctuated in the various stages. Thirty-six percent of respondents who were reviewing the test database were anxious. In the planning stage, it went down to 20%. Anxiety went up to 25% in the local system stage. It again increased to 48% in the fully operational stage of implementation. The increase in the fully operational stage could be caused by the respondents not knowing what will happen now that their libraries are up fully operational on OhioLINK. Happiness also fluctuated greatly. The farther along in the implementation the happier the respondents were, until, they reached the local system being operational. It drops off from about 40% in the testing database stage to 13% in the local system stage. It then jumps dramatically up to 52% in the fully operational stage. This could be explained by the respondents getting used to a new system and all of the changes it brings along. By the time the system is up fully, the respondents have had training on the system and had been using it longer.

Between 20% to 30% of the respondents from each stage felt pressured. This is the most consistent of the attitudes examined. It is not known if the pressure is internal or external. To find out what is causing the pressure another study would need to be done. The attitudes of unenthusiastic and felt was a waste of time and money both decrease the further along the implementation. Eighty percent of the respondents in the planning stage were unenthusiastic,

while only 20% of the respondents with a fully operational system had this attitude. Twenty-nine percent of the respondents, who did not know what stage they were in, thought it was a waste of time and money, while only 8% of the respondents with fully operational systems felt the same. The symptoms of computer anxiety, technostress and resistance to change do decrease as implementation advances up until the system is fully operational. Then some of the symptoms such as headaches, anxiety, and happiness show an increase. These may be caused by the implementation of the system or from other external factors.

Will the level of individual staff participation in the implementation of the new system correlate positively with the individual's acceptance of the new system? The level of individual staff participation in the implementation of the new system does not correlate positively with the individual's acceptance of the new system. First area looked at is if there has been training for the staff to use OhioLINK. Seventy-five percent of the respondents said there had been training. Comparing this response to whether or not they would or would not change to OhioLINK, Table 4-4, shows that 71% of the respondents who had training and 67% of the respondents, who had not had training, would change to the OhioLINK system. Seventy-three percent of the respondents, who had answered "yes" there had been training, thought the training was useful in clarifying OhioLINK. Comparing this to the respondents opinion on changing systems, Table 4-5, 84% of the respondents, who thought that training had been useful and had helped to clarify OhioLINK, would change to OhioLINK. It can be seen that there is a positive attitude toward OhioLINK in respondents who have and have not had training on how to use it.

The next area looked at was if there were planning committees or groups and if the respondents were involved in these groups or not. Table 4-6 shows that 68% of the respondents answered that their libraries had planning groups or committees. Of those that answered "yes" there were planning committees or groups, 60% were involved in them. Seventy percent of the

respondents that were involved in planning groups and committees thought that the groups or committees had been helpful in making the system work. Comparing whether or not the respondents were involved in committees or groups and their attitudes toward changing to the OhioLINK system, Table 4-7, showed that 70% of the respondents who had been involved in the planning groups, and 68% of those who had not, would change to the OhioLINK system. Training and involvement did not appear to influence the respondents' views on changing to OhioLINK. Respondents appear positive about changing to OhioLINK whether or not they had training on the system, or whether or not they had been involved in planning for the system.

SUMMARY

Three research questions were investigated. The first question looked for a relationship between staff attitudes and stage of implementation of OhioLINK. The respondents were positive throughout the implementation. The positive attitudes increased until the respondents in the local system stage were examined. There the positive attitude drops. It increases again in the respondents in the fully operational stage. The second question looked for computer anxiety, technostress and resistance to change. The responses implied that symptoms decreases until the system is fully operational and then some do show an increases, such as, headaches, anxiety and happiness. The third question looked at staff participation and acceptance of the OhioLINK system. Overall respondents were positive about their library changing over to the OhioLINK system. Respondents were positive toward the change to the new system whether or not they had participated in committees or groups in their libraries. They were also positive to the change whether or not they had training on OhioLINK.

CHAPTER 5

DISCUSSION

This study was looking for the existence of computer anxiety, technostress and resistance to change. The libraries currently implementing the OhioLINK system were chosen for this study to see if any of those factors were prevalent in libraries changing from one automated system to another. Most of the literature on resistance to change deals with the change from a manual system to an automated system not from automated system to automated system (Baker, 1979; Fine, 1979; and Olsgaard, 1989). Literature is beginning to appear which discusses the impact of converting from an older automated system to a new second generation system. (Scharf and Ward, 1989, and Saunders and Kwon, 1991).

FINDINGS

The first question examined whether the library's level of implementation would correlate with staff attitudes toward changing library systems. The findings for this question were that as the respondents approach the local operational stage they are increasingly positive about the implementation of OhioLINK. In this stage, the positive responses dropped. It is possible that the respondents were less positive in the local system operational stage than they were in the database review stage because they were actually using the new system in the local operational stage. The respondents may have only heard about and/or seen a small amount of the system while the database was being reviewed. In the local operational stage, they had to get acquainted with the system and learn all of its idiosyncrasies. The respondents' previous systems may have been very different from the OhioLINK system. The drop may have been caused by the respondents having to learn the new commands and new functions of OhioLINK. The increase in positive responses to OhioLINK in the fully operation stage may be caused by the respondents having worked on the new system for a while. As the system becomes more familiar, the respondents become more comfortable with OhioLINK. The findings of this question correlate to a study conducted at the

Indiana State Library (Shaw, 1986). It was indicated that the staff felt they had been given more information about and were more comfortable with the automation process after they had been using the system for a year.

The findings of the second question researched were that most symptoms of computer anxiety and technostress decreased as respondents reached the fully operational stage of implementation of the OhioLINK system. Some symptoms, such as headaches and anxiety, did show to decrease until the full operational stage of implementation where an increase was observed. The existence, in most of the libraries involved in this survey, of a present or previous computer system may have helped reduce the symptoms. The increase of some of the symptoms of technostress in the fully operational stage of implementation could have been caused by the change from older technology to new. It is unclear if after the staff has used the new system, fully operational, for a while if the symptoms that had increased in the final stage would decrease. The respondents of the survey were very much in favor of technology and keeping up with new innovations. A few did voice their concerns about changing systems, but not many. The uncertainty of what will come was present among the respondents.

The findings for the third question, which looked to see if individual staff participation in the implementation of the new system had any effect on the individual's acceptance of OhioLINK, were that there was no relationship between the individual staff participation and acceptance of OhioLINK. The staff was positive about switching to the OhioLINK system whether or not they had training on it. Seventy-one percent of those who had training and 67% of those who had not had training were positive about switching to OhioLINK. The accessibility of the system during the implementation may have been a factor for the positive responses of both groups. The staff may have had access to a limited system during the various stages of implementation. The systems basic search commands are very end user friendly, such as, press "T" for title search, "A" for author search and "S" for subject search. All staff members could do basic searches with little or no training. The training sessions showed the staff how to execute the more involved processes on

the system. In the library where the researcher works, not all staff members had the opportunity to go to the initial training sessions. Training sessions were limited to a certain number of people representative of the library staff because of space and computer terminal limitations. After these people had been trained, they went back to their departments and trained other staff members on what they had learned in the sessions.

In addition, there was also no relationship between involvement in planning groups or committees and the acceptance of OhioLINK. Respondents were positive about changing to OhioLINK whether or not they had been involved with planning groups or committees. Seventy percent of those who had been involved and 68% of those who had not were positive about changing to OhioLINK. Individual participation did not seem to be a factor in acceptance of OhioLINK. There are some individuals who like to be involved in the process of things while others do not. In the library where the researcher works, staff members were able to sign up for one of the different committees available. By limiting the number of committees for each person, the entire staff was given an opportunity to be involved. Some chose to participate, others did not. All staff members were given the opportunity to learn more about OhioLINK through various other ways, such as, other staff members who were involved in the different committees, staff meetings, where updates and information about the system were given, and exploring the system on their own. The staff had various avenues to choose from to receive information about the system. This may help to explain why staff involvement in planning groups or committees did not influence the individual staff members' acceptance of OhioLINK.

Findings' Implications and Conclusions

The implications and conclusions of the questions researched are the following:

1. The staff from the various libraries were positive about changing to OhioLINK from the beginning of implementation. The drop in the positive attitude in the local operational stage does not seem to influence the staff's attitudes once the system is fully operational. Therefore, the staff's

enthusiasm and eagerness to work with OhioLINK in the local system stage may be expected to decrease until they are comfortable with the new system. Once the staff is use to the system and the system goes fully operational, the staff's positive attitudes can be expected to increase.

2. The staff may show increased symptoms of computer anxiety and technostress in the fully operational stage of implementing OhioLINK. The increase may be caused by learning the new system or by the unknown changes in their jobs that awaits the staff as more and more libraries become fully operational. Therefore, staff members may complain more about the fully operational system. They may like the system, but feel overwhelmed and/or worried. (Bichteler, 1986 and Jones, 1989) indicated that introduction of new computer systems may appear threatening to the employees. Minor changes caused by the computer systems may be viewed as an attempt to change the current shape of the organization.

3. Individual staff participation in planning groups or committees for OhioLINK does not influence the acceptance of OhioLINK by the staff. Therefore, the system implementors should not worry if only a small number of staff members want to participate in the planning. All the staff members should be given the opportunity to participate in planning groups and committees because some people like to be involved in groups or committees while others prefer to learn things on their own. By giving them the opportunity to be involved, all staff members can feel as they had a choice and decided for themselves to participate or not.

4. Finally, training did not appear to influence the staffs acceptance of OhioLINK. Those who had training and those who had not were positive about changing to the OhioLINK system. Therefore, training has no influence on whether or not the staff is positive about the system. Presenting the system in a positive way to the staff may have more of an influence on their attitudes than training. Further research would be needed to verify the existence of this relationship.

DISCUSSION OF LIMITATIONS

The limitations of the study were that only a small group, 10% was chosen randomly from each library. That leaves 90% of the staff of each library not asked to participate in the study. Also, 42, questionnaires were returned by the libraries unanswered. How these respondents would have answered the questionnaire is unknown. They may have answered the same way the respondents had, or there may have been a noticeable change in percentages with their responses added. Another limitation is that the researcher realized their were more questions needed to be asked the respondents about changing to OhioLINK. These questions leaped out as the researcher was studying the responses that were received. More questions on training and attitudes toward changing to OhioLINK may have helped to explain some of the results that were found and may be some that were not.

RECOMMENDATIONS FOR FURTHER RESEARCH

Recommendations for further research would be as follows:

Establish the validity and reliability of the survey instrument used in this study by administering the questionnaire to other libraries as they begin the planning and implementation of OhioLINK.

At a future time, give the eighteen founding member libraries the questionnaire again and compare the responses to the first group.

As new members join OhioLINK, study to see if they respond the same way as the original group responded.

Design another research tool that would investigate the relationship between levels of training and acceptance of OhioLINK.

And, as systems keep evolving, see if when the third generation of library systems evolves, if computer anxiety, resistance to change and technostress can be seen.

SUMMARY

The first question examined was whether the library's level of implementation would correlate with staff attitudes toward changing library systems. The findings for this question were that as the respondents approach the local operational stage they are increasingly positive about the implementation of OhioLINK. In this stage, the positive responses dropped. The positive attitude again increases in the fully operational stage. It may be implied that as the respondents become more comfortable with the system, their attitudes become more positive. The second question examined computer anxiety, resistance to change and technostress. Symptoms of technostress were seen to increase in the respondents working in libraries with OhioLINK fully operational. The increase may be caused by learning the new system or by the unknown changes in their jobs that awaits the staff as more and more libraries become fully operational. the third question examined if individual staff participation in the implementation of the new system had any effect on the individual's acceptance of OhioLINK. There was no relationship between the individual staff participation and acceptance of OhioLINK. Training was also looked at in this question. No relationship was found between training and acceptance of the system. Limitations such as sample size and response rate were discussed to show that they may have effected the study's responses. It was recommended that the sites surveyed be given the questionnaire again at a later time to see if the responses are similar. Also, future members should be surveyed to see if there is a similarity in their responses to the original members surveyed.

Bibliography

Albritton, R. L., Siecert, M. C. Investigating Resistance to Computers (Computer Anxiety) in an Academic Library. Washington D.C.: Council on Library Resources, 1984. ERIC. ED 288506.

American Library Directory. New York, NY : Bowker, 42nd Edition. Vol. 2. 1989.

American Library Directory. New York, NY : Bowker, 43rd Edition. Vol. 2. 1990.

American Library Directory. New York, NY : Bowker, 44th Edition. Vol. 2. 1991.

American Library Directory. New York, NY : Bowker, 45th Edition. Vol. 2. 1992.

American Library Directory. New York, NY : Bowker, 46th Edition. Vol. 2. 1993.

Baker, S. L., "Managing Resistance to Change." Library Trends. 38(1) (Summer 1989): 53-61.

Bichteler, J. "Human Aspects of High Tech in Special Libraries." Special Libraries. (Summer 1986): 121-128.

Brod, C. Technostress: The Human Cost of the Computer Revolution. (Reading, MA: Addison-Wesley, 1984).

Corbin, J. B. Directory of Automated Library Systems. Second Edition. (New York, NY: Neal-Schuman Publishers, 1989).

Cronbach, L. J. Essentials of Psychological Testing. Third Edition. New York, NY: Harper and Row, 1970).

Fine, S. Resistance to Technological Innovation in Libraries. (Pittsburgh, PA: University of Pittsburgh, 1979). ERIC. ED 226730.

Fine, S. "Technological Innovation, Diffusion and Resistance: An Historical Perspective." Journal of Library Administration. 7(1) (Spring 1986): 83-108.

Haff, M. R. The Effect of Experience, Computer Efficacy, Computer Attitudes, and Computer Anxiety on Motivation to Use Computers. (Bowling Green, OH: Bowling Green State University, December, 1992).

Hennerson, M. E., Morris, L., & Fitz-Gibbons, C. How to Measure Attitudes (Beverly Hills, CA: Sage Publications, 1978).

Jones, D. E. "Library Support Staff and Technology: Perceptions and Opinions." Library Trends. 37(4) (Spring 1989): 432-56.

Kupersmith, J. " Technostress and the Reference Librarian." Reference Services Review. Summer 1992: 7-14, 50.

Maurer, M. and Simonson, M. Development and Validation of a Measure of Computer Anxiety. Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, Texas, January 20-24, 1984). ERIC. ED 243428.

Moran, T. P. "An Applied Psychology of the User." Computing Surveys. 13 (March, 1981): 1-12.

Ohio Board of Regents. OLIS: Connecting People, Libraries, & Information for Ohio's Future. (Columbus, Ohio: the Ohio Board of Regents, December 1989).

OhioLINK®. About OhioLINK. (Columbus, Ohio: OhioLINK, October 1992).

OhioLINK®. Evolution of the OhioLINK Vision. (Columbus, Ohio: OhioLINK, October 1992).

Olsgaard, J. N. "The Physiological and Managerial Impact of Automation on Libraries." Library Trends. 37(4) (Spring 1989), pp. 484-94.

Saunders, L. M., and Kwon, M. L. "Changing Systems: Managing the Transition." Computers in Libraries. May 1991: 8-13.

Scharf, M. and Ward, J. "Side-by-Side: Users React to a Second Online Public Access Catalog." Library Trends. 37(4) Spring 1989: 402-13.

Sessions, J., Lee, H., & Kimmel, S. "OhioLINK: Technology and Teamwork Transforming Ohio Libraries." Wilson Library Bulletin. June 1992: 42-45.

Shaw, D. "Staff Opinions in Library Automation Planning: A Case Study." Special Libraries. Summer 1986: 140-151.

Shuman, B. A. "The "Hometown" Syndrome: Will the First System you Learn Always Be Your Favorite?" Online. March 1992: 54-59.

Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. STAI Manual. (Palo Alto, CA: Consulting Psychologists Press, Inc., 1970).

Time, the weekly news-magazine. A National Survey of the Public's Attitudes Toward Computers. (New York, New York: Time Inc., 1971).

APPENDIX A

School of Library and Information Science
Columbus Program
(614) 292-7746

"The Effects of Computer Anxiety and Technostress, as Functions of Resistance to Change, on the Staff of the 18 Founding OhioLINK libraries as the OhioLINK Automated System is Initiated"

March 17, 1994

Dear Library Employee:

I would appreciate your participation in my research project on resistance to change among OhioLINK library personnel. The purpose of this study is to establish whether there is resistance to change in these libraries and if it is caused by computer anxiety and/or technostress.

The attached questionnaire is completely anonymous and your participation is voluntary. Should you decide not to return the survey, there would be no penalty of any kind. You may cease your participation at any time without penalty.

A summary of the complete results will be sent to the director of each library. The statistics **will not** be broken down in any way that may identify how each individual participant answered.

Please return your completed questionnaire in the enclosed addressed envelope by **March 27, 1994.**

If you would like more information about this research project, please call me at (614) 267-8731 or Dr. Carl Franklin (614) 292-7746. This project has been approved by the Kent State University. If you have questions about Kent State University's rules for research, please call Dr. Eugene P. Wenninger (216) 672-2851.

Sincerely,

Donna R. Popovich, Graduate Student
School of Library and Information Science
Kent State University

124 Mount Hall, 1050 Carmack Road
Columbus, OH 43210

QUESTIONNAIRE

1. Age:
   (a)under 18 (b)18-29 (c)30-39 (d)40-49 (e)50-59 (f)60+

2. Sex:
   (a)female (b)male

3. Highest level of education attained:
   (a)high school diploma or equivalent (b)some college (c)associates degree
   (d)bachelors degree (e)masters degree (f)doctorate

4. Computer Experience(in years):
   (a)0-1 (b)1-5 (c)6-10 (d)11-15 (e)16-20 (f)20+

5. Length of time worked in library(in years):
   (a)0-1 (b)1-5 (c)6-10 (d)11-15 (e)16-20 (f)21-25 (g)26-30 (h)30+

6. Position in library (**please circle only one**):
   (a)student assistant (b)clerical staff
   (c)library support staff(i.e. library assistant, library associate)
   (d)librarian-non degree (e)librarian-degree (f)administrative
   (g)automation support (h)other(specify):

7. Department work in:
   (a)circulation (b)interlibrary loan (c)reference (d)technical services
   (f)fiscal (g)planning and research (h)administration (i)other(specify):

8. Do you feel that new technology is forced upon us by outside experts?
   (a)yes (b)no (c)don't know

9. Do you feel that new technology will affect your job security?
   (a)yes (b)no (c)don't know

10. Does new technology make your job easier or harder?
    (a)easier (b)harder (c)don't know

11. Is keeping up with new technologies important? (i.e.,. buying faster computers)
    (a)yes (b)no (c)don't know

12. How has technology affected your work at the library?
    In what ways? (This is a free response question, please write out your response in the space provided, or on the back of the questionnaire. If continuing on the back, please write the question number next to the response.)

13.At work, do you ever have any of the following feelings?

	never	rarely	sometimes	often	usually
a. tired, bored, the day seems to drag on					
b. irritable, angry, frustrated					
c. there is more to do than I can handle					
d. I need more training to do my job					
e. useful, competent, confident					
f. in general, satisfied with my life					

14.In your opinion, is too much money spent on new computers and technical equipment, and not enough in other areas in the library?
(a)yes **(b)**no **(c)**don't know

15.Are there people at the library who train others on how to use the OPACs and/or other computer systems?
(a)yes **(b)**no **(c)**don't know

16.If you answered "yes" to 15, do the trainers help others to understand the OPACs and/or computer systems in the library?
(a)yes **(b)**no **(c)**don't know

17.Have you ever done or felt any of the following because of a work situation? **(circle the letter of all that apply)**

a. taken a "mental health" day off, just to get a break
b. say that you agree to an idea and then "just don't get around to doing it"
c. find that you can't learn to do some new job that has been assigned to you
d. feel like quitting
e. come to work late
f. refuse to be pleasant to your colleagues
g. try to squash an idea by talking it down
h. argue strongly against something even though you're not sure of your opinion
i. none of the above

18.Which word of the following pairs describes your library as you see it:
(circle one word in each pair)

a. opened or closed
b. social or isolating
c. tense or pleasant
d. participatory or authoritarian
e. innovative or traditional
f. people-oriented or task-oriented

19. The following are statements people have made about computers. Please mark whether you agree, disagree, or have no opinion.

	Agree	No Opinion	Disagree
Uses of computers are affecting the lives of all of us			
computers always give accurate information			
Computers create more jobs than they eliminate			
Computer systems break down frequently			
Computers only make mistakes when people give them wrong information			
Computers are changing our lives too rapidly			
It is very difficult to correct computer errors			
Computers are more reliable than people			
People are becoming too dependant on computers			
Computers can produce results which are more accurate than the information they are given			
Computers can think for themselves			
Today we can do many things that would be impossible without computers			
"Computer mistakes" are really mistakes made by people who use computers			

20.How are new ideas or changes presented to the staff?
(Circle all that apply)
(a)rumor **(b)**memo **(c)**meetings **(d)**directives **(e)**consultation with staff
(f)other (specify):

21.What stage of implementing OhioLINK is your library in currently?
(a)system fully operational and connected to Central Site
(b)local system operational only**(c)**test database being reviewed
(d)planning equipment and software needs **(e)**don't know

22.Has there been training at the library on how to use OhioLINK?
(a)yes **(b)**no **(c)**don't know

23. If "yes" to 22, was the training useful and did it help clarify OhioLINK?
(a)yes (b)no (c)don't know

24. Is the equipment for OhioLINK easy to use? (i.e., light pens, scanners, dumb terminals, personal computers,)
(a)yes (b)no (c)don't know

25. Are the commands on OhioLINK easy to understand and follow?
(a)yes (b)no (c)don't know

26. Is changing from the current system to OhioLINK beneficial for the staff? (e.g., Will it help improve job quality?)
(a)yes (b)no (c)don't know

27. Since you found out that your library was changing to OhioLINK, have you felt any of the following when the topic is being discussed **(circle all that apply)**:
(a)excited (b)nervous (c)had headaches (d)anxious (e)happy (f)pressured into accepting the new system (g)unenthusiastic about the project (h)felt it was a waste of time and money

28. Did the library have system planning groups or committees when the system before OhioLINK was installed?
(a)yes (b)no (c)don't know

29. Were you involved with any of your library's system planning groups or committees?
(a)yes (b)no (c)don't know

a. Have these groups or committees been helpful in making the system work?
(a)yes (b)no (c)don't know

30. Is OhioLINK useful to you in your job?
(a)yes (b)no (c)don't know

31. If the decision was up to you, would you?
(a)change to the OhioLINK system, or (b)keep the system that is currently being used by your library, or (c)change to a different system, or (d)don't know

32. How do you feel about your library converting to OhioLINK from the previous system in place? What thoughts and/or fears are brought to mind? (This is a free response question, please write out your response in the space provided, or on the back of the questionnaire. If continuing on the back, please write the question number next to the response.)

PLEASE ANSWER ALL OF THE PREVIOUS QUESTIONS. ANY QUESTIONS LEFT UNANSWERED WILL MAKE THIS QUESTIONNAIRE INVALID TO BE USED FOR THE RESEARCH PROJECT.

33

THANK YOU FOR YOUR PARTICIPATION!

PENDIX B Collection Size, Staff Size, and Automated systems in use before OhioLINK, by library

Library & Collection Size	Staff Size: Professional	Staff Size: Nonprofessional	Students	Systems in Use	Automated Library Systems in use before OhioLINK: Acquisitions	Cataloguing	Circulation	Serial Check-in	ILL
University of Akron Bk. Vol. - 2,393,237; Per. Sub.- 6248; Doc. bd.- 492,217; CD ROM titles - 40; Micro Fiche 1,243,467; AV -total 21,625.	35	41	137	VTLS	Medianet, VTLS	OCLC, Medianet, VTLS	Medianet, VTLS	VTLS	OCLC
Bowling Green State University Bk. Vol. - 1,693,637; Per. Sub. - 8134; Micro. bd. - 1,509,297; AV-F's 64,770, Sound rec & AV - 620,333, other - 993,321.	52	56	233	Dataphase-turnkey system	Developed in-house	OCLC	LSZ-turnkey system	Microlinx	OCLC
Case Western Reserve University Bk. Vol. - 1,732,430; Per. Sub. - 15,311; Microforms - 1,970,710.	59	79	30	GEAC	GEAC	GEAC	GEAC	GEAC	GEAC:OCLC
Central State University Bk. titles -141,000, Vols. - 150,000; Per. Sub. - 855; Micro.- total - 323,584; AV - total -3631, VF 27.	9	11	77	N/A	N/A	N/A	N/A	N/A	OCLC
University of Cincinnati Bk. Vols. & bd. Per. - 1,435,451; Per. Sub. - 14,382; CD ROM titles - 49; Micro. - total - 1,930,070.	56	116	78	N/A	Innovacq, Ultrix, Delnet & TCPI	WLN	N/A	N/A	OCLC
Cleveland State University Bk. titles - 432,155, Vols. - 815,648; Per. Sub. - 4028, Vols. bd. - 122,195.	25	35	100	Notis	Developed in-house	OCLC	Notis	N/A	OCLC
University of Dayton Bk. titles - 502,761, Vols. 643,734; Per. Sub. - 2776, Vols. bd. 111,382; Docs. 193,385.	21	23	58	Prime-Dynix & Innovacq	N/A	OCLC	Prime-Dynix	N/A	OCLC
Kent State University Bk. Vols. - 2,110,328; Per. Sub. - 10,7000; Micro. bd. - 1,414,912.	37	89	200	Notis	N/A	OCLC	Notis	Notis	OCLC
Medical College of Ohio Bk. titles - 44,837; Per. Sub. - 1905, Vols. bd. - 119,307, Micro. bd. - 3448.	6	12	N/A	Online public access catalogue-OCLC	N/A	OCLC	N/A	N/A	OCLC
Miami University Bk. Vols. - 1,344,884; Per. Sub. - 9143; Micro. bd. - 2,059,331 Doc. bd. - 543,696, Micro. - 541,481.	32	50	N/A	Innopaq-Innovative Interfaces	N/A	OCLC	Innopaq	Innopaq	OCLC
Northeastern Ohio Universities College of Medicine Bk. Vols. - 38,662; Per. Vols. bd. - 33,114.	9	10	7	Online public access catalogue-OCLC	N/A	OCLC	N/A	N/A	OCLC
Ohio State University Bk. titles - 2,274,379, Bk. Vols & bd. Per. - 4, 517,095; Per. Sub. - 32,151, Micro. bd. - 3,378,218.	119	207	148	LCS	Innovacq	OCLC	LCS-(developed in house)	N/A	OCLC
Ohio University Bk. Vols. & Docs. - 1,544,226; Per. Sub. - 21,308.	36	68	53	N/A	Faxon Datalinx-turnkey system	OCLC	Va Tech Library System-turnkey	N/A	FAX & OCLC
Shawnee State University Bk. Vols. - 105,000; Per Sub. - 700, Vols. bd. - 132.	9	9	77	N/A	N/A	N/A	N/A	N/A	OCLC
State Library of Ohio Bk Vols. - 2,572,741 (incl field units & doc holdings); Per. Sub. - 699.	42	88	N/A	LCS	Baker & Taylor-turnkey system	OCLC	LCS-(developed by OSU)	Innovacq	OCLC
University of Toledo Bk. Vols. 764,103; Per Sub. - 6688, Vols. bd -167,979, Micro. bd. - 1,322,340; Doc. bd. - 653,439.	33	47	35	Notis	Innovacq	OCLC/Notis	Upmost-(Notis)	Innovacq	Telex, OCLC, & Fax
Wright State University Bk. Vols. - 491,309; Per. Sub. - 4379, Micro. bd. - 964,890.	23	38	122	N/A	N/A	OCLC	N/A	N/A	OCLC
Youngstown State University Bk. titles - 402,218, Vols. - 499,680; Per. Sub. - 2992, Vols. bd. - 95,500; Doc. bd. - 170,779; Doc titles - 48,711.	15	25	17	VTLS & HP	N/A	OCLC	VTLS	N/A	OCLC

NOTE: N/A -not available. The information was not found in sources looked at.
Some locations did not have an automated system in place before OhioLINK. This explains some of the missing information.

SOURCES: American Library Directory 1989-90, 1990-91, 1991-92, 1992-93, 1993-94.
Directory of Automated Library Systems, 1989.

NT STATE UNIVERSITY HUMAN SUBJECTS REVIEW BOARD
PPLICATION FOR APPROVAL TO USE HUMAN SUBJECTS IN RESEARCH

APPENDIX C

LOG NUMBER _____
REVIEW DATE _____

Please type all information. HANDWRITTEN FORMS CANNOT BE ACCEPTED.

Name Donna R. Popovich Telephone (614) 267-8731 Address 690 Riverview Dr. Apt. 130 Columbus, Ohio 43202

Department Library and Inforamtion Science Faculty Rank/Student Status Graduate Student

Project Title The Effects of Computer Anxiety and Technostress, as Functions of Resistance to Change, on the Staff of the 18 Founding OhioLINK libraries as the OhioLINK Automated System is Initiated.

Type of Project: Faculty Research __ Externally Funded __ (Agency: _____)
Student Directed Research X (Advisor: Dr. Carl Franklin)
Thesis __ Dissertation __ Course Requirement __ (course #: _____)
Other __ (Specify: _____)

Duration of Project: Starting Date March 1, 1994, but not before approval is obtained.

Ending Date March 17, 1994

I certify that the research procedures for this project and the method of obtaining consent (if any), as approved by the Human Subjects Review Board, will be followed during the period covered by this research project. Any future changes will be submitted for Board review and approval prior to implementation.

Donna R Popovich 2-21-94
Principal Investigator Date

Carl Franklin 2/21/94
Faculty Advisor (If PI is a student) Date

ACTION TAKEN:

REVIEWER

✓ Level I, Category 2
__ Level II, Category ____
__ Level III, To Full Board

Richard Rubin 2-28-94
Primary Reviewer Date

_____
Co-Reviewer (Level II) Date

KSU HUMAN SUBJECTS REVIEW BOARD

____ Approved, Level I
____ Approved, Level II

_____
Administrator, HSRB Date

COMMENTS OR CONTINGENCIES:

① How are questionnaires returned? On SASE? Sent to home addresses to ensure anonymity?
② PT I, #2 should be answered "yes"?

HSRB ACKNOWLEDGEMENT OR APPROVAL:

____ Approved by Board ____ Contingent ____ Disapproved

① Will use SASE for return of questionnaire to protect employee confidentiality

_____
Chairperson, HSRB

APPENDIX D

Table 4-1 Demographics

	N=78
Age:	N/%
(a)under 18	0/ 0%
(b)18-29	9/12%
(c)30-39	21/27%
(d)40-49	31/40%
(e)50-59	13/17%
(f)60+	4/ 5%
No Response = 36	

	N=77
Sex:	N/%
(a)female	60/78%
(b)male	17/22%
No Response = 37	

	N=77
Education:	N/%
(a)high school diploma or equivalent	8/10%
(b)some college	7/ 9%
(c)associates degree	6/ 8%
(d)bachelors degree	19/25%
(e)masters degree	35/46%
(f)doctorate	2/ 3%
No Response = 37	

	N=78
Computer Experience(in years):	N/%
(a)0-1	3/ 4%
(b)1-5	9/12%
(c)6-10	29/37%
(d)11-15	25/32%
(e)16-20	11/14%
(f)20+	1/ 1%
No Response = 36	

	N=78
Length of time worked in library(in years):	N/%
(a)0-1	1/ 1%
(b)1-5	19/24%
(c)6-10	10/13%
(d)11-15	19/24%
(e)16-20	14/18%
(f)21-25	11/14%
(g)26-30	3/ 4%
(h)30+	1/ 1%
No Response = 36	

Table 4-1 Continued

Position in library	N=78 N/%
(a)student assistant	0/ 0%
(b)clerical staff	1/ 1%
(c)library support staff (i.e. library assistant, library associate)	40/51%
(d)librarian-non degree	1/ 1%
(e)librarian-degree	18/23%
(f)administrative	14/18%
(g)automation support	0/ 0%
(h)other(specify):	4/ 5%
No Response = 36	

Department work in:	N=77 N/%
(a)circulation	17/22%
(b)interlibrary loan	1/ 1%
(c)reference	10/13%
(d)technical services	21/27%
(f)fiscal	1/ 1%
(g)planning and research	1/ 1%
(h)administration	9/12%
(i)other(specify):	17/22%
No Response = 37	

TABLE 4-2 SYSTEM PREFERENCES COMPARED TO STAGES OF IMPLEMENTATION OF OHIOLINK

	STAGE OF IMPLEMENTATION					
SYSTEM PREFERENCES	(a)SYSTEM FULLY OPERATIONAL N /R% /C%	(b)LOCAL SYSTEM N/ R% /C%	(c)TEST DATABASE N /R% /C%	(d)PLANNING N /R% /C%	(e)DON'T KNOW N /R% /C%	ROW TOTALS N/ R%
(a) CHANGE TO OHIOLINK	22/ 45% /88%	4/ 8%/ 50%	19/ 39%/ 73%	3/ 6%/ 60%	1/ 2%/ 13%	49/ 68%
(b)KEEP CURRENT SYSTEM	2/ 20%/ 8%	2/ 20%/ 25%	3/ 30%/ 12%		3/ 30%/ 38%	10/ 14%
(c)DIFFERENT SYSTEM		1/ 25%/ 13%	3/ 75%/ 12%			4/ 6%
(d) DONT KNOW	1/ 11%/ 4%	1/ 11% /13%	1/ 11%/ 3%	2/ 22%/ 40%	4/ 44%/ 50%	9/ 12%
COLUMN TOTALS N/ C%	25/ 35%	8/ 11%	26/ 36%	5/ 7%	8/ 11%	72/ 100%

NO RESPONSE = 42

TABLE 4-3 STAGE OF IMPLEMENTATION OF OHIOLINK COMPARED TO ATTITUDES FELT BY RESPONDENTS

FELT BY RESPONDENTS WHEN THE TOPIC OF OHIOLINK IS BEING DISCUSSED

STAGE OF IMPLEMENTATION	(a)EXCITED N /R% /C%	(b)NERVOUS N /R% /C%	(c)HEADACHES N /R% /C%	(d)ANXIOUS N /R% /C%	(e)HAPPY N /R% /C%	(f)PRESSURED N /R% /C%	(g) UNENTHUSIASTIC N /R% /C%	(h) WASTE OF TIME AND MONEY N /R% /C%	ROW TOTALS N /R%
(a)SYSTEM FULLY OPERATIONAL	19 /76% /43%	8 /32% /36%	4 /16% /50%	12 /48% /44%	13 /52% /48%	5 /20% /29%	5 /20% /36%	2 / 8% /20%	25 /36%
(b)LOCAL SYSTEM	4 /50% / 9%	2 /25% / 9%	1 / 13%/13%	2 /25% / 7%	1 / 13%/ 4%	2 /25% /12%	5 /63% /36%	1 /13% /10%	8 /11%
(c)TEST DATABASE	17 /68% /39%	6 /24% /27%	2 / 8% /25%	9 /36% /33%	10 /40% /37%	7 /28% /41%		4 /16% /40%	25 /36%
(d)PLANNING	3 /60% / 7%	3 /60% /14%	1 /20%/13%	1 /20%/ 4%	2 /40% / 7%	1 /20% / 6%	4 /80% /29%	1 /20% /10%	5 / 7%
(e)DON'T KNOW	1 /14% / 2%	3 / 43% /14%		3 /43% /11%	1 / 14%/ 4%	2 /29% /12%		2 /29% /20%	7 /10%
COLUMN TOTALS	44 /63%	22 /31%	8 /11%	27 /38%	27 /38%	17 /24%	14 /20%	10 /14%	70/ 100%

NO RESPONSE = 44

TABLE 4-4

TRAINING AVAILABILITY COMPARED TO THE RESPONDENTS' SYSTEM PREFERENCES

	SYSTEM PREFERENCE				
TRAINING ON OHIOLINK?	(a) CHANGE TO OHIOLINK N /R% /C%	(b)KEEP CURRENT SYSTEM N /R% /C%	(c)A DIFFERENT SYSTEM N /R% /C%	(d) DON'T KNOW N /R% /C%	ROW TOTALS N/ R%
(a)YES	40 /71% /78%	8 /14% /73%	3 / 5% / 75%	5 / 9% /56%	56/ 75%
(b)NO	10 /67% /20%	3 /20% /27%	1 / 7% /25%	1 / 7% /11%	15/ 20%
(c)DON'T KNOW	1 /25% / 2%			3 /75% /33%	4/ 5%
COLUMN TOTALS N/ C%	51/ 68%	11/ 15%	4/ 5%	9/ 12%	75/ 100%

NO RESPONSE = 39

TABLE 4-5

RELEVANCE OF TRAINING COMPARED TO THE RESPONDENTS' SYSTEM PREFERENCES

	SYSTEM PREFERENCES				
WAS TRAINING USEFUL AND HELPED CLARIFY OHIOLINK?	(a) CHANGE TO OHIOLINK N /R% /C%	(b)KEEP CURRENT SYSTEM N /R% /C%	(c) A DIFFERENT SYSTEM N /R% /C%	(d) DON'T KNOW N /R% /C%	ROW TOTALS N/ R%
(a)YES	36 /84% /86%	3 / 7% /38%	2 / 5% /67%	2 / 5% /33%	43/ 73%
(b)NO		2 /67% /25%		1 /33% /17%	3/ 5%
(c)DON'T KNOW	6 /46% /14%	3 /23% /38%	1 / 8% /33%	3 /23% /50%	13/ 22%
COLUMN TOTALS N/ C%	42 / 71%	8 / 14%	3 / 5%	6 / 10%	59/ 100%

NO RESPONSE = 55

TABLE 4-6

PRESENCE OF PLANNING GROUPS COMPARED TO THE RESPONDENTS' SYSTEM PREFERENCES

	SYSTEM PREFERENCE				
DID THE LIBRARY HAVE SYSTEM PLANNING GROUPS OR COMMITTEES FOR THE SYSTEM BEFORE OHIOLINK?	(a) CHANGE TO OHIOLINK N /R% /C%	(b)KEEP CURRENT SYSTEM N /R% /C%	(c)A DIFFERENT SYSTEM N /R% /C%	(d) DON'T KNOW N /R% /C%	ROW TOTALS N /R%
(a)YES	38 /75% /75%	7 /14% /64%	2 / 4% /50%	4 / 8% /45%	51/ 68%
(b)NO	4 /57% / 8%		2 /29% /50%	1 /14% /11%	7/ 9%
(c)DON'T KNOW	9 /18% /53%	4 /23% /36%		4 /23% /45%	17/ 23%
COLUMN TOTALS N/ C%	51/ 68%	11/ 15%	4/ 5%	9/ 12%	75/ 100%

NO RESPONSE = 39

TABLE 4-7

INVOLVMENT IN GROUPS COMPARED TO SYSTEM PREFERENCE

WERE YOU INVOLVED WITH LIBRARY'S SYSTEMS PLANNING GROUPS OR COMMITTEES?	SYSTEM PREFERENCE (a) CHANGE TO OHIOLINK N /R% /C%	(b)KEEP CURRENT SYSTEM N /R% /C%	(c)A DIFFERENT SYSTEM N /R% /C%	(d) DON'T KNOW N /R% /C%	ROW TOTALS N/ R%
(a)YES	21 /70% /41%	4 /13% /36%	2 / 7% /50%	3 /10% /33%	30/ 40%
(b)NO	30 / 68% /59%	6 /14% /55%	2 / 5% /50%	6 /14% /67%	44/ 59%
(c)DON'T KNOW		1 /100% / 9%			1/ 1%
COLUMN TOTALS N/ C%	51/ 68%	11/ 15%	4/ 5%	9/ 12%	75/100%

NO RESPONSE = 39

HAVE THESE GROUPS OR COMMITTEES BEEN HELPFUL IN MAKING THE SYSTEM WORK?	SYSTEM PREFERENCE (a) CHANGE TO OHIOLINK N /R% /C%	(b)KEEP CURRENT SYSTEM N /R% /C%	(c)A DIFFERENT SYSTEM N /R% /C%	(d) DON'T KNOW N /R% /C%	ROW TOTALS N/ R%
(a)YES	28 /78% /56%	4 /11% /40%	3 / 8% /75%	1 / 3% /13%	36/ 50%
(b)NO	5 /56% /10%	2 /22% /20%	1 /11% /25%	1 /11% /13%	9/ 12%
(c)DON'T KNOW	17 /63% /34%	4 /15% /40%		6 /22% /75%	27/ 38%
COLUMN TOTALS N/ C%	50/ 69%	10/ 14%	4/ 6%	8/ 11%	72/ 100%

NO RESPONSE = 42

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

NOTICE

REPRODUCTION BASIS

☒ This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☐ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").