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THE USAGE AND VALUE OF PUBLIC-ACCESS INTERACTIVE COMPUTERS  
AS A MEANS OF TOURIST INFORMATION DISSEMINATION AT  
STATE WELCOME CENTERS IN THE UNITED STATES

By

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## ABSTRACT

### THE USAGE AND VALUE OF PUBLIC-ACCESS INTERACTIVE COMPUTERS AS A MEANS OF TOURIST INFORMATION DISSEMINATION AT STATE WELCOME CENTERS IN THE UNITED STATES

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The researcher's purpose in this study was to assess the usage and value of interactive computer systems in state welcome centers, as perceived by state welcome center directors. The study was undertaken to (a) determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States and (b) examine possible factors that could affect usage or nonusage.

Surveys were mailed to a complete population, the state welcome center directors, or their state equivalent, of the 46 states that have state welcome centers. Of the 46 states, 45 (97.8%) responded. Data analyses were primarily descriptive in nature; chi-square testing was used for statistical comparison.

Of the 45 states responding, 71% had either used, were currently using, or were planning to use these systems. Approximately 84% of the user states thought the computer had met their needs somewhat or completely. All users gave the overall system, on the average, close to a good rating. The most important

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reasons for states' nonusage of interactive computers was the perceived cost. Other factors that affected usage included familiarity, number of state welcome center customers, and training.

The following major conclusions were drawn: (a) public-access interactive computers are being used at welcome centers to disseminate information to travelers, (b) current user states are fairly satisfied with the systems, (c) independent vendors are operating the systems in most states at no cost to the state, and (d) most problems arising from usage appear to be associated with the vendors.

Recommendations for further research involved the following areas: ownership and operation issues, customer usage and nonusage profiles, welcome center personnel issues, system evaluations, usage at unstaffed centers, usage of interactive computers for services, application to other government and private areas, and methods of information processing.

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## CHAPTER I

### THE PROBLEM

#### Introduction

The travel and tourism industry has rapidly grown into a significant component of the American economy (Holecek, 1990; Toy, Rager, & Guadagnolo, 1990). Forecasted to become the largest business activity in the world, tourism has already become a significant part of the social and economic life of America (Crossley & Jamieson, 1988).

As tourism grew into an important economic force, it became significant to higher education as a subject of recognized intellectual pursuit (Ziqiang & Stoltman, 1988). Evidence of academia's growing involvement with tourism has been witnessed by increased research and efforts to develop curricular programs and support services (Holecek & Rosa, 1989; Michigan State University, 1990). Ziqiang and Stoltman (1988) believed that the projected growth of tourism will continue to challenge academia in two major areas: the preparation of future specialists to meet the needs of the industry and the scholarly research necessary for continued development of the industry. It seems that such higher education support will be critical to future development of the tourist industry, especially in the area of travel information research.

Travel information managers find it difficult to stay abreast of the rapid growth in the travel industry and the changing needs for and conveyances of information the traveling public, especially when the literature and published research have been developing more slowly. Staffed state welcome centers on interstate highways have been the major conveyance of information for the traveling public in the past, but technological advances now offer other possibilities. Some states have tried to meet the changing information needs and demands by installing interactive computers, which can be used directly by customers to receive travel information. Since information needs and possible solutions have become more complex as both the industry and technology have advanced, the focus of this research was on the dissemination of travel information, more specifically, on the use of public-access interactive computers for tourist information dissemination at state welcome centers.

#### Statement of the Problem

The problem addressed in this study was the investigation of the use of interactive computer systems as a means of disseminating tourist information at state welcome centers. If the potential effect of interactive computers is to be positive, its value as an information dissemination service and user satisfaction with the system must be investigated. Specifically, information concerning the extent of usage, problems associated with usage, and satisfaction issues is needed to guide further advancement of interactive computers in the related fields of recreation and parks and the travel and tourism industry.

If the usage of interactive computer systems is to be a positive one, it is important to have detailed information about current usage and how effective or problematic such usage has been. It is important to gather comprehensive, national information about these issues from people associated with welcome center administration. This total picture would allow welcome center administrators to maximize the effectiveness of such systems and assist professionals in related fields in meeting the information needs of their publics as well as the traveling public.

#### Need for the Study

As is shown in the review of literature, information about the usage of interactive computers in welcome centers is not easily found in the literature. As a result of her study, which tested the value of a touch-sensitive computer system in a park visitors' center, Zales (1985) recommended that future researchers examine "different types of touch-sensitive systems and their abilities to provide trip planning assistance" (p. 155). Also, as the result of another study at a national park, Huffman (1985) recommended that future investigators examine the effectiveness of computer-based decision aids in different environments and for other recreation decision situations. The literature has supported a growing interest in the usage of interactive computers as an information service for recreation and park agencies and has pointed out the need for further research in areas other than parks.

As the review of literature will illustrate, there are many different needs that research into the use of interactive computer systems at welcome centers would address. Most of these needs can be categorized into two broad areas: the traveling public and the travel industry. The traveling public needs adequate and current information provided in a timely, usable format. The travel industry, especially state welcome center directors, needs research that will help meet the staggering informational needs of their users. Research on interactive computer systems would appear to be helpful in meeting such needs.

Some states have become pioneers in the development of interactive computer information services for the traveling public by placing interactive tourist information computers in state welcome centers. However, no attempts have been made to assess how many states have been involved with such systems or how successful or problematic administrators think these systems are. Yet, such an assessment is required if the effectiveness of interactive systems is to be maximized. For the adoption of computers as public-access information tools to be successful, it is necessary to assess the effect interactive systems may have on those states using them in their state welcome centers.

#### Purpose of the Study

The researcher's purpose in this study was to assess the usage and value of interactive computer systems in state welcome centers, as perceived by state welcome center directors. This investigation

was predicated on the need for professionals to deal with the expanding use of the computer and its potential as a means of effectively communicating needed information to the traveling public.

### Operational Definitions

For the purposes of this study, the following definitions are included:

1. User was defined as any state that has ever used an interactive computer system.

2. Interactive computer system and system were used interchangeably in this study. They were defined as a computer and/or video system used directly by customers to obtain travel information. This may be a computer with a computer screen that displays a menu (a set of choices, such as geographic regions or restaurant, lodging, and tourist-attraction information) on the screen for selection by the customer. Customers read a question, select their answer from the list on the screen, and then either touch their selection on a touch-sensitive screen or nearby pad or type the number that corresponds to their choice on a keyboard. Some systems may use slides, videos, or laser disks to display pictures and graphics. Some systems use sound, and some offer computer printouts to consumers. Regardless of individual characteristics, these systems should allow customers to interact with the system on their own.

3. Welcome centers referred to in this study were defined as any centers, plazas, or areas on highways that are either staffed or unstaffed and that make available to the traveling public tourist information through graphics, maps, photographs, literature, or computer systems.

4. Customer was defined as any welcome center visitor.

5. State welcome center director was defined as the state-level administrator directly responsible for all state welcome centers.

### Research Objectives

This study was undertaken to:

1. Determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States, as perceived by state welcome center directors.

2. Examine possible factors that could affect usage or nonusage of interactive computer systems.

### Specific Research Questions

The following questions were used to assess the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers, as perceived by state welcome center directors. These questions helped determine the state welcome center administrators' perceptions of current usage of and satisfaction with interactive computers by welcome center visitors. These perceptions offered some indication of how the directors

actually think that the traveling public uses the systems and how satisfied these customers are with the system. In an attempt to discover current usage and value of interactive systems, it also was important to discern reasons for usage, purposes and quality of usage, system descriptions, satisfaction with computer systems, and information related to the process of computerization.

To achieve the first research objective, the following research questions were designed:

1a. Are your states using, have they used, or do they plan to use the interactive computer systems at their state welcome centers as a means of disseminating information to the traveling public?

1b. How long have interactive computer systems been used?

1c. What are the reasons for the use or nonuse of interactive computer systems?

1d. For what information purposes are these systems being used?

1e. What kinds of systems are being used?

1f. How satisfied are administrators with the systems?

1g. How has the system been financed?

1h. What is the respondents' perception of the amount of system usage by welcome center customers?

1i. What is the respondents' perception of customer satisfaction with the system?

1j. How familiar are state welcome center directors with interactive computer systems?



1k. What is the approximate number of customers using state welcome centers annually?

1l. How many welcome centers in each state are staffed and unstaffed?

1m. How many welcome centers use an interactive computer system?

The following questions pertain to the second research objective and were designed to allow the exploration of possible factors that could affect interactive computer system usage and nonusage. Relationships were sought among usage/nonusage of interactive computer systems and variables such as cost, training, familiarity, number of welcome centers, and number of customers. State welcome center directors were asked to respond to certain questions with their perceptions of actual conditions. Nonusers were asked to respond to some of the following questions with their perceptions of actual conditions if their state were to use interactive computers.

2a. What is the actual or perceived initial equipment cost for one computer system?

2b. What is the actual or perceived amount of welcome center personnel training required for the computer system?

2c. How familiar are state welcome center directors with interactive computer systems?

2d. What is the approximate number of customers using state welcome centers annually?

2e. How many welcome centers in each state are staffed and unstaffed?

2f. How many welcome centers use an interactive computer system?

### Limitations

This study was conducted for the purpose of making descriptive assertions about the use of interactive computers in state welcome centers. Because minimal research has been conducted in this area, and because perceptual data were used in this study, causal linkages could not be proven. It was possible and even necessary, however, to try to determine what, if any, limitations existed.

This study was confined to a complete population that was small. Lack of compliance with such a small population could influence the findings. The scope of the study was limited to the state travel information center directors, or their state equivalent, of the 46 states that had state welcome centers. This study was limited by the bias of the respondents and the time required to complete the questionnaire. These limitations should be considered when interpreting the conclusions drawn from this study.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### Introduction

A review of the literature was undertaken to seek to understand the information needs of the traveling public and how those needs are being met, especially by interactive computer systems. To complete the literature review, the following areas were researched: the importance of information to the traveling public, the lack of information for the traveling public, the informational needs of the traveling public, and the potential use of interactive computer systems to meet these needs.

#### Importance of Information Dissemination

The importance of supplying leisure consumers with adequate information on recreation opportunities has been advocated. This has been evidenced in the literature that emphasizes the importance of information, the communication process, and the promotional aspects of marketing, and in other literature (Reiling, Criner, & Oltmanns, 1988; Reyburn & Knudson, 1975; Roggenbuck & Berrier, 1982). As educators and other professionals place more importance on information dissemination through the use of interactive computer systems, they are recognizing the effect that information has on many aspects of leisure. Recently, researchers have investigated

the importance of information dissemination and its effect on leisure choices. Some of the specific areas investigated have been in the areas of participation, usage distribution, and users' attitudes.

Reyburn and Knudson (1975) studied the influence of information on participation in park naturalists' programs. Five different parks and four levels of information treatments (no information, personal invitation, written communication, and innovation) were studied for 12 weeks during the summer. The influence of the information was measured by attendance at recreation programs. The actual attendance counts for an average of the three information treatments increased attendance 47.2% over the control group. The findings of this study indicate that efforts to disseminate information will increase participation and, thereby, will have an influence on leisure choices.

Roggenbuck and Berrier (1982) studied the effectiveness of communication efforts to redistribute wilderness campers from a heavily used meadow in a North Carolina park. Two methods of information dispersal (a brochure alone and a brochure plus personal contact) and a control-group design were used to monitor usage for 15 weeks during the heavy-use season. The results showed that usage dropped from 62% (control) to 44% during the brochure-alone treatment and to 33% during the brochure-plus-personal-contact treatment. Their findings showed that information can redistribute usage. The introduction of information affected the decisions users

made about campsites and, thereby, affected the spatial patterns of use.

Interested in whether information programs could alter the attitudes of users, Reiling et al. (1988), from the University of Maine, examined users' attitudes toward higher fees at state park campgrounds. Standard survey techniques involving mailed questionnaires to 1,066 campground parties yielded a response rate from residents and nonresidents of 66% (702 responses). The questionnaire was designed to ascertain attitudes about current fee schedules and how these attitudes changed when users were informed about other camping fees and the cost of providing campsites in the state parks.

The percentage of residents who thought the current fee was about right decreased 30%, and the number who thought the current fee was too low increased 24%. Less than 3% of the respondents who thought that the fee was too high did not appreciably change. The number of nonresidents who thought the fee was too high decreased 13%. The number of nonresidents who thought the fee was about right also decreased substantially to 39%. The number who thought that the current fee was too low increased 37%. An examination of the data indicates that information can significantly alter the attitudes of users and may influence user choices. The results also suggest that information programs may be an effective way to increase users' understanding and acceptance of fee increases and may decrease complaints.

The three studies cited above support the belief that information can have a positive influence on leisure choices. For this to happen, users need to possess adequate information with which to make their choices.

#### Lack of Information

Because information seems to be a significant factor in leisure choices, it is important to discover whether people actually have adequate information with which to make such choices. Research in this area has tended to support the belief that consumers' information is less than perfect (Stynes, Spotts, & Strunk, 1985).

Daniel Spotts, an assistant professor specializing in tourism in the Department of Park and Recreation Resources at Michigan State University, and Daniel Stynes, an associate professor specializing in the mathematical modeling of recreation behavior in the same department, completed a study of the public's familiarity with urban parks in Lansing, Michigan (Spotts & Stynes, 1985). Findings of this study indicated that attempts to estimate and predict recreation-area usage have incorrectly assumed that consumers have adequate information about these areas. A representative sample of 201 individuals were personally interviewed. Familiarity with the parks was evaluated on a continuum ranging from lower-level awareness to upper-level knowledge. Results indicated that, on the average, respondents had heard of 11 of the 19 parks included in the study but were generally ill-informed about the specifics of certain recreation facilities. In general, the study reflected a considerable lack of awareness of recreation opportunities.

Spotts and Stynes concluded that, as in other city studies, Lansing residents were ill-informed about many urban recreation opportunities. One further result that emerged from the data was that awareness levels declined as the distance from the park increased. This negative relationship between distance and awareness seems particularly acute because this study was dealing only with distances within a citywide park system. To extrapolate this relationship on a larger scale would suggest that tourists traveling away from home would decrease in their awareness levels of available leisure options and further increase in their need for information.

Other studies have corroborated the Lansing findings. Stynes (1982) studied the role of information in recreation-site selection at a park in Ingham County, Michigan. Eighty percent of these park visitors were not aware of another county park located on the other side of the county. These results seem to confirm and strengthen the negative relationship between distance and awareness found in the Lansing study.

The Third Nationwide Outdoor Recreation Survey involved a nationally representative sample of 4,029 Americans by telephone and supplemented this with a parallel "on-site" survey of more than 10,000 national recreation area users (Robinson, 1979). The data revealed that a lack of information had prevented 32% of the respondents from using outdoor recreation areas over the past year. This national study further confirmed both the existing lack of information and the effect of such ignorance on leisure choices.

An examination of the above-mentioned research indicates that information is important because it affects leisure choices. Also, it indicates that consumers lack adequate information, especially if they are far away from the leisure resource. Because it is reasonable to assume that people need factual information to make good choices, it is problematic that they lack the necessary information needed to do so. If steps are to be taken to remedy such a dearth of adequate information, it seems that, first, the information needs of the consumer, which in this study was the traveling public, must be understood.

#### Information Needs of the Traveling Public

Certain information needs of the traveling public are obvious. Travelers need information that is current, accurate, adequate, and easy to access. One systematic way for travelers to get such information is through state welcome centers. Because so many of them exist and most travelers are aware of their existence, they are an available means of disseminating current, accurate, and adequate information to travelers. However, very few researchers have investigated these information needs or the efforts and effectiveness of state welcome centers in meeting them (Gitelson & Perdue, 1987). Several studies, although specific to individual states, have offered some insight into the information needs of travelers.

Gitelson and Perdue (1987) examined the role of North Carolina's seven state welcome centers in disseminating travel-related information. On-site interviews of 300 travel parties were



conducted through the use of three different randomly assigned questionnaires. The data regarding why people stop at welcome centers indicated that 62% stopped for a highway map and at least one-fifth stopped for trip-specific information, such as attraction and lodging information. Whereas 75% listed use of the restroom as the primary reason for stopping, once stopped, these parties appeared to use the welcome center for informational needs, as well. The average length of time visitors spent at welcome centers was 18 minutes. Asked to indicate whether they were likely to use the information received, a fairly large number indicated either "definitely yes" or "yes": 76% for route decisions, 65% for attraction decisions, and 47% for lodging decisions. Eighty-two percent also indicated that they would use the information received at the welcome centers for a future trip(s).

Welcome centers, as reflected in this study, seem to be an important source of travel information to state visitors. A substantial number of visitors stop primarily for trip-related information, an even larger percentage was likely to seek information once stopped, and most indicated that they were likely to use the information for current or future trips. Perdue and Pitegoff (1990) emphasized that the primary purpose of welcome centers was to "disburse information to visitors." As the development and improvement of welcome centers increases throughout the country, awareness and use of the centers as sources of information may likely increase (Gitelson & Perdue, 1987).

Another study conducted in Michigan corroborated the North Carolina finding that welcome centers serve an important information-dissemination role. A survey of travelers was conducted in Michigan's central Upper Peninsula (Spotts & Mahoney, 1989). Seven-page questionnaires were filled out by 2,732 travelers from selected campgrounds, motels, roadside parks, restaurants, and attractions in the region. Forty-three respondents in this survey indicated that they had used brochures from highway welcome centers (30%) or information received from welcome center employees (13%) as a source of trip-related information. The fact that 78% of the travel parties contained an individual who had visited or traveled through the area before may have caused these individuals to perceive less of a need for formal information. Information needs of other populations, therefore, might be even larger. The preceding results suggest that travelers do use welcome center personnel and literature for sources of information.

A survey of Michigan welcome centers (Michigan Department of Transportation, 1986) involved nine state welcome centers. More than 18,000 questionnaires (18,473) were completed at these centers, and 6,000 follow-up surveys mailed to those who had completed questionnaires were returned. The results of this survey indicated that travelers stopping at welcome centers seemed to have a destination planned, but not trip specifics, such as the route, lodging, or activities. More than 40% of the respondents said they had made no reservations before leaving home, and almost 60% of the respondents said they had made no reservations en route. The

potential effect of welcome center information on where to go, what to see, and what to do at chosen destinations is quite significant in these areas. Primary sources of information reported in this survey were consistent with those reported in other studies done in Michigan and North Carolina. More than 50% of the users indicated that their main reason for stopping at the welcome center was for information. The users who indicated that they stopped at the welcome center for information sought information on attractions (56%), route (24%), accommodations (23%), camping (20%), restaurants (8%), and other (17%).

The influence of welcome center information on actual leisure choices was quite significant. Seventy-four percent of the respondents stated that the welcome center information had influenced their trip. This positive influence was noted in the following areas: visited attractions (67%), visited areas not planned (59.5%), used lodging/camping information (31.5%), ate at a restaurant (25.5%), increased the number of days stayed (9%), participated in recreation (7.5%), and other (9%).

The results of studies in this section indicate that travelers rely on information received en route to make many trip-planning decisions and choices. They also indicate that travelers use state welcome centers as a major source of such information. Travelers seem to need many different kinds of information. Some kinds of information identified in the research include routing, directions, state park vacancies, camping, hotel/motel, tours, events, points of interest, and recreation. Travelers need this information for both

their final destination and stops en route to their destination. Their location needs may be related to a state, region, county, city, out of state, or even a contiguous county. Tourists not only need a variety of types of information for one or more of a variety of locations, they also need the information tailored to meet their needs, interests, abilities, length of time and amount of money available for their trip, and the purpose of their vacation, such as excitement or adventure.

Traditionally, visitors had three options from which to find information at welcome centers. They could seek assistance from an employee, attempt to find it on their own, or use a combination of both methods. There are potential disadvantages to these methods. Relying on employee assistance means that the tourist may receive information biased by personal preferences, experiences, exposure, memory, training, education, and interpersonal skills. Finding literature without assistance may be time consuming, frustrating, and fruitless. Because the average time spent at a welcome center will be short, the tourists, naturally, will want to maximize the effectiveness of their time. Information distributors, such as hotel and restaurant owners, also desire effective and timely distribution of their information. Var, Liu, Sheldon, and Boberg (1986) indicated that not just distributors and travelers, but "all elements of the travel industry depend upon access to timely and accurate information" (p. 111).

Considering what is known about tourist information needs, it is not difficult to envision the large amounts of information in a

variety of formats that are required for many different locations. As the travel industry grows in complexity, the demands on information processing will increase (Var et al., 1986). It certainly seems reasonable, in this day of technological advances, that computers could easily handle such increased demands for variety and volume so as to offer adequate information that is current, accurate, and easy to access. One could assume, therefore, that user-friendly computers available for tourist use would be a potentially valuable way to supply the needed information.

#### The Use of Computers to Meet the Information Needs of the Traveling Public

In the field of recreation and parks, few professionals considered the possibilities of computerized systems in the mid-1960s. Yet, today, the application of computers to routine tasks seems well under way. In addition, college and university recreation and park departments are turning to computer use. A national study of microcomputer use in recreation and park academic departments showed that approximately 60% of the 104 academic programs in the recreation and park departments were already using computers or planned to be using them by 1984 (Stubbles, 1983). As Schubert and Douglass (1986) emphasized, the question for recreation and park agencies is no longer whether a computer should be used, but how it can be used.

Although computer usage by recreation and park agencies has increased dramatically over the past 20 years, the range of

applications generally has been limited to traditional uses in word processing and budgeting or spreadsheet work (Thayer, Sorant, & Wagner, 1985). Although the computer has been used as a viable management tool, few recreation and park agencies or educational institutions seem to have explored the computer's potential to be used directly by the general public to access information for themselves. Var et al. (1986) encouraged research-oriented faculty to explore and research the potential of travel computer technology and to "direct the progress of technological applications in the travel industry" (p. 116). Although theirs was not a scientifically delineated study, Hayward and Fairey (1984) offered some insight into such computer potential. They emphasized that interactive, user-operated leisure information services in recreation

. . . are still in their infancy. As more and more people become curious about interacting with computers, the potential for providing information and services through interactive computer programs can only increase. Undoubtedly, computers will become more common in management functions such as property and inventory control, but their use for public access is still being tested. (pp. 37, 39)

Although the field is still in its infancy, several different approaches to computer information services have been developed and used for tourist information dissemination. Touch-screen computers were used at the 1982 Tennessee World's Fair in Knoxville, Tennessee, and the 1984 World's Fair in New Orleans, Louisiana. The ability of these computers to store vast amounts of information and to respond to the user's level of desired detail allowed users to explore and learn about seemingly limitless environmental topics (Zales, 1985).

User-operated tourist information systems have been established in cities such as Rochester, New York; Toronto, Canada (Teleguide); and Boston, Massachusetts (Teletouch) (Hayward & Fairey, 1984). Such systems offer cultural, historical, recreational, and other downtown information about the metropolitan areas. The user's ability to manipulate and interact with technology and to select topics and information according to individual interests, needs, or whims are some reasons that interactive computers are so appealing (Zales, 1985). Such touch-screen tourist information services may be the first wave of public-access computers (Hayward & Fairey, 1984).

There seem to be many reasons why interactive computers would be used in welcome centers. However, none was found in a review of the literature. Only two studies involving interactive computers as a source of visitor information were found, and these were located at national parks. Zales (1985) studied the value of a touch-sensitive computer system in a national park visitors' center in Tennessee. Data were collected from 735 computer users, but the primary analyses were performed on a subgroup of 274 users who had found new information on the computer that they would consider using. Two hundred of this subgroup returned a follow-up questionnaire. A substantial number, 93% of this subgroup, expressed satisfaction with the computer itinerary for meeting activity interests. The most common reason given for their satisfaction ( $n = 44$ ) was that the computer had given them what they

were looking for. Zales concluded that user response to the computer was very favorable, users found the system easy to use, and the computer did not appear to negatively alter users' park experiences.

Huffman (1985) compared the effectiveness of a brochure and a touch-sensitive computer to redistribute visitors at a national park in Utah. Data were collected from 53 subjects in each of three experimental groups--computer, brochure, and control--for a total of 159 subjects. Questionnaires and follow-up postcards also were used. Findings indicated that both the computer and the brochure were effective in redistribution. The computer was found to be more effective because 58.5% of the computer group, 37% of the brochure group, and 18.9% of the control group selected designated sites. Both the brochure and the computer were found to be less effective with certain park visitor subgroups--those with substantial experience in the park and those who had done more advanced trip planning. Findings also indicated a high user acceptance of both treatments. Whereas 20% of the brochure group stated that the brochure was their most important information source, 54% of the computer group indicated that the computer had been their most important source. This study showed that the computer system was very effective in spatial-use distribution. The computer's high level of user acceptance was accentuated by the fact that users accepted the computer as an information source even more than they accepted the traditional brochure.



The review of the literature on interactive, user-operated tourist information services revealed a lack of literature on this subject. Perhaps as Hayward and Fairey (1984) believed six years ago, research and usage in this area are still minimal. Yet, considering the tourists' and the tourist industry's need for information, the ability of computers to meet these needs, and the existing use of computers in the field for other purposes, one begins to question whether such information systems are truly in limited use. Another, and perhaps more plausible, explanation may be that these systems are being researched and used, but that their findings have not yet been published.

Evidence exists, although research findings have not been published, that computers have been implemented as user-operated tourist information services in many different locations. In particular, computer usage has been experimented with in forest usage. For example, Peter Forsberg (1990), Department of Park and Recreation Resources, Michigan State University, developed a microcomputer system called Ranger, which helps match campers' needs with an available campsite from more than 60 camping areas at a national forest. Park personnel with minimal training operate the computer to handle all types of customer inquiries. Some benefits of the system include ease of operation; a faster, more efficient, and accurate form of inquiry processing; improved site-selection advice; increased customer satisfaction; uniform recording of inquiry information; the easy creation of a current inquiry data

base useful for market research analysis; and the development of an information base for planning, management, and promotional decisions (Forsberg, 1990). This research has not yet been printed. Although it is not a user-operated system, the potential for such interaction is plausible. The existence of this system does show that computers were substantially used as an information-management tool by a large agency, yet documentation of this program does not exist in the published literature.

A self-service public information system does exist in a Utah national forest (Wasatch-Cache National Forest, 1990). Forest visitors interact with a touch-sensitive screen to learn about park areas, recreational activities, trails, permits, or other menu items. Some advantages of this system include the following: concise information is quickly provided; information can be changed and updated easily; large amounts of information can be provided on a variety of park activities and areas; permits such as firewood and wilderness permits can be issued and customized to reflect changing conditions; permits can be recalled by name, address, volume, or number; the system is easy for visitors to use and understand, visitor demands on employees are reduced and may diminish the need for personnel, and the system cost is reasonable (\$3,000 to \$7,000) and cost effective because there are no moving parts to wear out. Again, research on this system has not been published.

In addition to the use of computers in forest activities, the possibilities for interactive computer applications at state welcome centers seem obvious. Because welcome centers exist mainly to

impart large amounts of varied information quickly to the traveling public, an interactive computer system seems a viable means of addressing their information needs. An interactive computer system can store large amounts of current and varied information, has flexible organizational formats, can be accessed readily, and can be easily understood and used by the average person. Although interactive computer systems would seem to offer potentially valuable applications to state welcome centers, as stated previously, the literature review revealed no published research. As with the forests, references to such systems were found, however.

A national study of travel information/welcome center programs was conducted by the Michigan Department of Transportation (1986). A questionnaire was mailed to each state's department of transportation, and information was gathered from each state. Although not asked directly whether their state used computer information systems for tourist information dissemination, eight states mentioned computers when asked about welcome center improvements in the last five years. Kansas, Michigan, and Minnesota stated that a computer information system was scheduled to be implemented during the 1985 season. New Jersey indicated that they had started to use a computer program that could give out travel-related information. North Carolina stated that a computer system with information and printed directions had been installed in each center. Ohio indicated that they had started the operation of a statewide tourist information network in 1984, which provides

travelers with tourism information. Tennessee reported that Touch and Go computer systems had been installed, which enable visitors to get tourist-related information directly from the computer. Virginia indicated that the Division of Tourism was evaluating the Touch and Go public-access computer system for probable use in welcome centers in 1985.

Given the above information, one can conclude that public-access interactive computer systems are in existence as a means of disseminating tourist information at welcome centers. Although possibly in existence, there is no published research or systematic documentation of these systems.

#### Summary

In this chapter a review of the literature was undertaken to seek to understand the information needs of the traveling public and how those needs are being met, especially by interactive computers. The following areas were included in this review: the importance of information dissemination to the traveling public, the lack of information for the traveling public, the informational needs of the traveling public, and the potential use of computers to meet these needs.

In conclusion, the review of the literature supported the following four beliefs:

1. Information is important to visitors and can influence their leisure choices.

2. Visitors lack adequate information, especially if they are far away from the leisure resource.

3. Travelers need many different kinds of information to make many en route trip-planning decisions, and they use state welcome centers as a major source of such information.

4. Public-access interactive computers have the potential to be an effective information tool for travelers and are in use at some welcome centers throughout the United States.

Although evidence exists, there is no published research or systematic documentation of interactive computer usage at welcome centers. Chapter III includes a description of the research methodology required to assess the usage and value of these systems at state welcome centers.

## CHAPTER III

### PROCEDURE AND METHODOLOGY

#### Introduction

The researcher's purpose in conducting this study was to assess the usage and value of interactive computer systems in the state welcome centers, as perceived by state welcome center directors. This investigation was predicated on the need for professionals to deal with the expanding usage of the computer and its potential as a means of effectively communicating needed information to the traveling public.

The research was designed to achieve the following objectives:

1. Determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States, as perceived by state welcome center directors.
2. Examine possible factors that could affect usage or non-usage of interactive computer systems.

#### Population

The investigation in this study was confined to a complete population, the state welcome center directors, or their state equivalent, of the 46 states that have state welcome centers. The

study was, therefore, a census that, with a complete return, would be the total population.

The first frame was a listing of the state welcome center or travel information center directors, or their equivalent, who were members of the State Travel Information Center Directors' National Association. Because the study was an attempt to assess state-level usage of interactive computers at welcome centers, it was important to survey the people most likely to be knowledgeable about their own state welcome center or travel information center situations. The state travel information center directors act as a proxy for their state and seemed, therefore, to be the best overall experts/judges of what was being done in the area of interactive computers. A list of 34 directors with membership in the State Travel Information Center Directors' National Association was gained from the State Travel Information Center Directors' National Association.

The second frame was a listing of 14 state travel information center directors, or their state equivalent, who were not members of the State Travel Information Center Directors' National Association. California and Alaska were not included because these states did not operate any state welcome centers. This list was compiled by the director of the Travel Industry Association from old membership listings from the State Travel Information Center Directors' National Association and from membership and networking information from the Travel Industry Association.

Titles for these state directors varied from welcome center directors to travel information managers, tourist information

managers, tourism program directors, bureau chiefs of tourism, travel and tourism administrators, and information or visitor service directors. They were located in departments that were just as varied from state to state: department of recreation, parks and tourism; department of tourism and travel; department of transportation; department of tourism and recreation; department of trade and economic development; and department of commerce.

From these two frames, a combined listing of 48 addresses and telephone numbers was collected from the Travel Industry Association Director.

#### Survey Development and Organization

The survey technique was employed to gather data. The questionnaire and the questions for the mail survey were developed, based on the purpose of the research; the review of related literature; and input from the Michigan Department of Transportation and professionals associated with welcome centers, travel or visitor information programs, the State Travel Information Center Directors' National Association, and the Travel Industry Association. Information regarding the survey format, type of information, organization of the survey instrument, and methods to increase the rate of return was gained from discussions and correspondence.

The questionnaire was pilot tested on a small group of Central Michigan University colleagues, people from the Michigan Department of Transportation in Lansing, and others involved in travel and



tourism research who were familiar with interactive computers and this particular study. The following changes were made:

1. Rankings were changed to ratings to allow for more comparisons among options.

2. Wording was changed and/or added to add clarity to the questions.

3. Questions were rearranged to ensure a more logical format and progression.

4. The instrument size was reduced to ensure a higher rate of return.

Following additional revisions generated from a review of the survey instrument by the board of the State Travel Information Center Directors' National Association and the Travel Industry Association Director, the final instrument and cover letter were prepared.

The following steps were taken to ensure a high rate of return:

1. The sanction and support of the State Travel Information Center Directors' National Association and the Travel Industry Association were gained for the survey. The State Travel Information Center Directors' National Association promoted the survey in their March-April newsletter. The Association sent a letter endorsing the survey and encouraging completion of the questionnaire in April, approximately one week before the instrument was mailed.

2. The cover letter outlined the value of the research and indicated the support of the associations.

In April 1991, a cover letter and survey (see Appendices A and C) were mailed to each of the 48 states presumed to have welcome centers. There were 38 responses (79.2%) to the initial mailing. The Association called each of the nonrespondents, and a second mailing in May resulted in four additional responses (87.3%), raising the total to 42 returns out of 48. Two states, Montana and Arizona, were eliminated from the study because they responded that they did not have state welcome centers. This dropped the total population to 46 states. Repeat phone calls, phone interviews by the researcher, additional mailings, and faxed surveys resulted in a final total of 45 usable surveys out of 46, for a final response rate of 97.8%.

#### Data Analysis

The survey was designed to be mainly descriptive and used mostly nominal or ordinal levels of measurement. The potential for ratio measurements existed in questions that requested information related to number of center visitors and number of systems or centers in use. Aside from the descriptive and exploratory nature of the survey, the questions also were designed to seek relationships between variables. For example, the researcher sought to determine whether relationships existed between the variable usage and the following variables: number of centers, number of customers, the director's familiarity with interactive computers, cost, and training. Causality was not explored because the

intention was mainly to describe and to determine relationships between variables.

The study was designed to achieve the following objectives:

1. Determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States.

2. Examine possible factors that could affect usage or non-usage.

To achieve the first research objective, the following research questions were designed:

1a. Are your states using, have they used, or do they plan to use the interactive computer systems at their state welcome centers as a means of disseminating information to the traveling public?

1b. How long have interactive computer systems been used?

1c. What are the reasons for the use or nonuse of interactive computer systems?

1d. For what information purposes are these systems being used?

1e. What kinds of systems are being used?

1f. How satisfied are administrators with the systems?

1g. How has the system been financed?

1h. What is the respondents' perception of the amount of system usage by welcome center customers?

1i. What is the respondents' perception of customer satisfaction with the system?

1j. How familiar are state welcome center directors with interactive computer systems?

1k. What is the approximate number of customers using state welcome centers annually?

1l. How many welcome centers in each state are staffed and unstaffed?

1m. How many welcome centers use an interactive computer system?

To achieve the second research objective, the following research questions were designed:

2a. What is the actual or perceived initial equipment cost for one computer system?

2b. What is the actual or perceived amount of welcome center personnel training required for the computer system?

2c. How familiar are state welcome center directors with interactive computer systems?

2d. What is the approximate number of customers using state welcome centers annually?

2e. How many welcome centers in each state are staffed and unstaffed?

2f. How many welcome centers use an interactive computer system?

Responses were transferred from the survey instrument to Opscan forms and entered into the Statistical Analysis System (SAS) computer program, which was used for the statistical analyses of the data collected. The computer program for data analysis was

completed by the Statistical Consulting Group at the Computer Services complex at Central Michigan University.

Likert-type scales, numerical and grouped numerical responses, open-ended questions, and check and yes-no responses were used on the survey to collect data. Frequency counts, two-way cross-tabulations, and percentages were used for descriptive purposes. Chi-square was used to perform statistical analysis of the data to determine whether significant relationships existed. This was done by "comparing the observed distribution of each variable with what the expected distributions would be if no relationship existed" (Lundegren & Farrell, 1985). The significance level for all tests was set at  $\alpha = .05$ . Means for some variables also were obtained.

#### Summary

This research study consisted of mailing surveys to a complete population, the state welcome center or travel information center directors, or their state equivalent, of the 46 states that have state welcome centers. A 97.8% response (45 of the 46 states) was obtained.

Respondents were asked to provide information regarding usage of interactive computer systems by the traveling public at state welcome centers. They responded to questions concerning reasons for usage, purposes and quality of usage, system descriptions, satisfaction with computer systems, and information related to the process of computerization.

Responses were analyzed using frequency distributions and percentages for descriptive purposes and two-way cross-tabulations and chi-square at the .05 significance level for statistical relationships.

## CHAPTER IV

### ANALYSIS OF THE DATA

#### Introduction

The survey instrument was mailed to a complete population, the state welcome center directors, or their state equivalent, of the 46 states that have state welcome centers. A 97.8% response was obtained when 45 of the 46 states returned the questionnaire. The questionnaire was designed to obtain information regarding usage of interactive computer systems by the traveling public at state welcome centers. Information was sought concerning reasons for usage, purposes and quality of usage, system descriptions, satisfaction with computer systems, information related to the process of computerization, and possible factors that could contribute to usage or nonusage.

This chapter is presented in three parts. The first part includes a summary of the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States. This covers Questions 1 through 25 of the survey instrument.

The second part is a summary of the nonuser states' responses. This summary includes Questions 26 through 28 of the survey instrument. The final part includes an examination of the possible

factors that could affect usage or nonusage. This analysis includes Questions 29 through 31 and Questions 1, 7, 25, 27, and 28 of the survey instrument.

### Usage Summary

All 45 states (respondents) were classified into one of four groups: (a) current users (those who were currently using interactive computer systems), (b) discontinued users (those who had previously used, but discontinued usage), (c) plan to use (those who were not currently using, but were planning to use the systems), and (d) no use (those who were not using and not planning to use computers). All 45 respondents are contained in Table 1.

Table 1.--State usage of interactive computers (n = 45).

Usage	Frequency	Percent
Still using	11	24.4
Discontinued	9	20.0
Plan to use	12	26.7
No use	13	28.9

Whereas 13 states reported that they had never used and were not planning to use interactive computers, nearly three-fourths of the states (32 or 71.1%) responded that they had used, were still using, or were planning to use interactive computers. More than half of the states (51.1%) indicated that they were either currently using or planning to use computers. Of the nine states that



discontinued usage, two indicated that they were in the process of developing or were considering a state system.

The remainder of this section includes data from the 20 states that were either currently using or that had discontinued usage. Table 2 illustrates the number of years that the computers were or had been in use in these 20 states.

Table 2.--Number of years interactive computers have been in use--  
frequency distribution (n = 20).

Years in Use	Frequency	Percent
1 year or less	4	20.0
2 years	9	45.0
3 years	3	15.0
4 years	2	10.0
5 or more years	2	10.0

More than half (65%) of the states had used computers for two years or less. Only 20% (four states) had used them for four or more years. The mean for the years of usage for the 20 respondents was 2.45 years (standard deviation = 1.23). Table 3 shows the separate and combined means for the years of usage for respondents currently using computers and/or respondents who had discontinued usage.

Table 3.--Number of years interactive computers have been in use--means.

Respondent	n	Mean	Std. Dev.
Current	11	2.64	1.50
Discontinued	9	2.22	.83
Total	20	2.45	1.23

Of the possible brands of computers used, four states reported using an IBM and one state each reported using an Apple, a General Digital, or a Laserview. As Table 4 illustrates, most states (16) reported using a PC (stand-alone). Only one state used a terminal (part of a larger system). Respondents could check all that applied.

Table 4.--Types of computers.

Type of Computer	Frequency
PC	16
Terminal	1
Other	3

The mode of interaction--how the customers interact with the computer--is reported in Table 5. Respondents could check all that applied. The most frequently reported mode of interaction was the touch-sensitive screen (17 states). The only other mode of

interaction reported was the keyboard (six states). Some states used both modes, which explains the response total of 23.

Table 5.--Mode of interaction used for interactive computer systems.

Mode of Interaction	Frequency
Keyboard	6
Touch screen	17
Touch pad	0

States were asked whether a vendor, subscribers, the state, and/or users had contributed to the payment for the system. Respondents could check all that applied. The method of funding is reported in Table 6. Subscribers (businesses such as resorts, restaurants, or hotels) were the most frequent method of funding (12 states). Vendors contributed to the payment for the system in nine states. Only five states reported the use of state contributions. One state listed a travel council as another method of funding.

Table 6.--Method used to fund the cost of interactive computer systems.

Contributor	Frequency
Vendor	9
Subscribers	12
State	5

Table 7 summarizes the approximate cost to the respondents' departments or states for one interactive computer. Of the 20 states responding, the majority (15 states or 75%) reported that there was no cost to their department or state. Of the five states that contributed to the payment for the system, four states (20%) paid more than \$5,000 for one computer and one state (5%) paid between \$3,000 and \$5,000 for one computer.

Table 7.--Cost to department or state for one computer (n = 20).

Cost	Frequency	Percent
More than \$5,000	4	20.0
\$3,001 to \$5,000	1	5.0
No cost	15	75.0

Respondents were asked to rate the factors that influenced their decision to use interactive computers from 1 (not at all important) to 5 (extremely important). Table 8 illustrates the means for the following questions:

- Q8.1. We wanted to reduce customer information demands on center personnel.
- Q8.2. We wanted an additional method to get individualized information to the customers.
- Q8.3. We wanted to increase the amount and quality of information given to customers.
- Q8.4. We wanted to reduce the amount of time it took for customers to receive tourist information.

Table 8.--Reasons for usage of interactive computer systems.

Variable	n	Mean	Std. Dev.
Q8.1 Reduce demands	17	2.06	1.20
Q8.2 Additional method	19	4.21	.98
Q8.3 Increase information	17	4.18	1.33
Q8.4 Reduce time	17	2.53	1.18
Q8.5 Other reasons	4	4.00	1.41

The reasons rated the highest, overall, were Question 8.2 with a mean of 4.21 and Question 8.3 with a mean of 4.18. Thus, the most important reasons for using interactive computers, on the average, were to get an additional method to give individualized information to the customers and to increase the amount and quality of information given to customers. The means indicate that, on the average, respondents thought that Q8.2 and Q8.3 were very important reasons and that Q8.1 and Q8.4 were somewhat important reasons for using the computer. Other reasons for using the computer were reported by four states. These reasons included meeting public demand beyond normal staffing hours (three states) and having computer systems mandated for use.

Respondents were asked how the computer system had met their needs (reasons for use--Q8.1 to Q8.4). Their responses are summarized in Table 9. It is noteworthy that 84.2% of the respondents thought that the computer had met their needs somewhat or completely. Only three respondents (14.8%) thought the computer had not met their needs at all.

Table 9.--How the computer met needs (reasons for usage) (n = 19).

Rating	Frequency	Percent
Not met at all	3	15.8
Met somewhat	11	57.9
Met completely	5	26.3

Respondents were asked to rate their satisfaction with computer areas (1 = very poor, 2 = poor, 3 = average, 4 = good, 5 = very good). Table 10 shows the separate and combined means and standard deviations for the ratings of computer areas for states currently using computers and/or states that had discontinued usage.

Table 10.--Computer areas.

Computer Area	n	Mean	Std. Dev.
<u>Computer Screen</u>			
Current users	11	4.18	.98
Discontinued	7	3.71	.76
Total	18	4.00	.91
<u>Computer Graphics</u>			
Current users	10	3.60	.96
Discontinued	7	3.00	1.15
Total	17	3.35	1.10
<u>Video Pictures</u>			
Current users	7	4.00	1.15
Discontinued	4	3.25	1.26
Total	11	3.73	1.20

Table 10.--Continued.

Computer Area	n	Mean	Std. Dev.
<u>Amount of Information</u>			
Current users	11	3.82	.98
Discontinued	8	2.00	1.41
Total	19	3.05	1.47
<u>Quality of Information</u>			
Current users	11	3.91	.94
Discontinued	8	2.50	1.51
Total	19	3.32	1.38
<u>Ease of Use</u>			
Current users	11	4.00	1.00
Discontinued	8	3.25	.46
Total	19	3.68	.89
<u>Interaction Speed</u>			
Current users	11	3.91	1.04
Discontinued	6	3.50	1.05
Total	17	3.76	1.03
<u>Quality of Sound</u>			
Current users	7	4.00	1.15
Discontinued	4	3.00	1.41
Total	11	3.64	1.29
<u>Quality of Printouts</u>			
Current users	7	4.00	.82
Discontinued	5	2.40	1.34
Total	12	3.33	1.30
<u>Reservation System</u>			
Current users	4	3.75	.96
Discontinued	0	0	0
Total	4	3.75	.96

For both groups, current users (4.18 = good to very good) and discontinued users (3.71 = average to good), the means for the computer screen were higher than other computer areas. The lowest mean rating for current users (3.60 = average to good) was for computer graphics. The discontinued users' lowest mean rating (2.00 = poor) was for the amount of information. The mean ratings for current users in all areas were from average to very good. The mean ratings for discontinued users in all areas were below a good rating.

Respondents were asked to rate their satisfaction with computer outcomes (1 = very poor, 2 = poor, 3 = average, 4 = good, 5 = very good). Table 11 shows the separate and combined means and standard deviations for the ratings of computer outcomes for states currently using computers and/or states that had discontinued usage. The lowest mean rating for outcomes occurred in the same area for both groups. The mean ratings for current users (3.00 = average) and discontinued users (1.86 = very poor to poor) were lower for reduced demands on staff than for the other two outcomes. The current users' mean ratings for customer usage (3.73) and satisfaction (3.91) were close to the good rating. The discontinued users' mean ratings for customer usage (2.63) and satisfaction (2.38) were between the average and the poor ratings.



Table 11.--Computer outcomes.

Computer Outcome	n	Mean	Std. Dev.
<u>Reduced Demands on Staff</u>			
Current users	9	3.00	.71
Discontinued	7	1.86	.69
Total	16	2.50	.89
<u>Customer Usage of the System</u>			
Current users	11	3.73	.91
Discontinued	8	2.63	.74
Total	19	3.26	.99
<u>Customer Satisfaction</u>			
Current users	11	3.91	.83
Discontinued	8	2.38	.92
Total	19	3.26	1.15

Respondents were asked to rate their satisfaction with the overall computer system (1 = very poor, 2 = poor, 3 = average, 4 = good, 5 = very good). Table 12 shows the separate and combined means and standard deviations for the overall computer system ratings for states currently using computers and/or states that had discontinued usage. The combined mean overall system rating was 3.26 (average to good). Whereas the mean overall system rating for the current users was 3.91, the mean overall system rating for the discontinued users was 2.38. The average overall system rating by current users was close to a good rating, whereas the average overall system rating by discontinued users was closer to a poor rating.

Table 12.--Overall system rating.

Respondent	n	Mean	Std. Dev.
Current users	11	3.91	.83
Discontinued	8	2.38	.74
Total	19	3.26	1.10

Respondents were asked to indicate by "Yes" or "No" responses for which information purposes interactive computers were being used. Table 13 summarizes their responses for each of the six purposes. The most frequently reported use (100% of 20 states) of the computer was for tourist attraction and recreation information. Lodging information was the next most frequently reported use, with 19 of the 20 respondents (95%) reporting usage. Restaurants (94.4%, n = 18) and camping (89.5%, n = 19) were other high-usage information areas. Of 17 respondents, 12 (70.6%) indicated that computers were being used for directions. In the least used information area, road and weather conditions, only two (15.4%) of the 13 respondents reported usage. Seven states reported other uses, which included reservation systems, events, coupons, advertising, towns, tourism regions, and videos of the state or tourism regions.

Table 13.--Information purposes.

Purpose	Frequency	Percent
<u>Road and Weather Conditions</u>		
No	11	84.6
Yes	2	15.4
	<hr/>	
Total	13	
<u>Restaurant Information</u>		
No	1	5.6
Yes	17	94.4
	<hr/>	
Total	18	
<u>Lodging Information</u>		
No	1	5.0
Yes	19	95.0
	<hr/>	
Total	20	
<u>Tourist Attraction and Recreation Information</u>		
No	0	0
Yes	20	100.0
	<hr/>	
Total	20	
<u>Camping Information</u>		
No	2	10.5
Yes	17	89.5
	<hr/>	
Total	19	
<u>Directions</u>		
No	5	29.4
Yes	12	70.6
	<hr/>	
Total	17	

All 20 users responded to the question asking how much computer training was actually required for welcome center personnel when the system was first installed. Their responses are summarized in Table 14. Nearly all of the respondents, 18 out of 20, reported that either no training had been required or that training had required only one to two hours. Only one state reported that training had required more than two hours. Thus, 90% reported that training had required less than two hours.

Table 14.--Amount of training required (n = 20).

Amount of Training	Frequency	Percent
None	7	35.0
1-2 hours	11	55.0
More than 6 hours	1	5.0
No basis for answering	1	5.0

Respondents who had discontinued usage (n = 9) were asked to specify their reasons for discontinuing. All of these reasons seemed to have one common denominator: problems with the private company, the vendor. Four states mentioned that the vendor had gone out of business. Other reasons included equipment failure or malfunction, out-of-date information, poor company servicing, and problems with printouts.

### Summary

Tables 1 through 14 illustrated data collected from the 20 states identified in Question 1 of the survey instrument that were currently using or that had previously used interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States. Questions 1 through 25 from the survey instrument were included in this section.

Of the 20 states identified as users, 11 were current users and nine had discontinued usage. More than half (65%) of these 20 states had used computers for two years or less, and only two states (10%) had used computers for five or more years. The personal computer (16 states) and the touch-sensitive screen (17 states) were the most common type of computer and mode of interaction used. Subscribers contributed to the payment for the systems in 12 states, and vendors contributed in nine states. Only five of the 20 states contributed to the payment for the system, paying \$3,000 to more than \$5,000 for one interactive computer. In 90% of the states ( $n = 20$ ), training had required less than two hours.

The most frequently reported uses of the computer were for tourist attraction and recreation information (100% or 20 states), lodging information (95% of 19 states), restaurants (94.4% or 18 states), camping (89.5% or 19 states), and directions (70.6% of 17 states).

The most important reasons for using interactive computers, on the average, were to get an additional method to give individualized

information to the customers (mean = 4.21) and to increase the amount and quality of information given to customers (mean = 4.18).

Ratings of computer areas showed that users were most satisfied with the computer screen and least satisfied with the amount of information. Users rated between average and good computer graphics, video pictures, reservation systems, quality of information, ease of use, interaction speed, quality of sound, and quality of printouts. Discontinued users, in particular, were least satisfied with the amount of information, rating it, overall, as poor.

All nine states that had discontinued usage had done so due to problems with the vendor. Either the vendor had gone out of business or the state had had problems with equipment, company servicing, or out-of-date information.

Approximately 84% of the 20 user states thought the computer had met their needs somewhat or completely, and users gave the overall system, on the average, close to a good rating.

#### Nonusage Summary

This section includes a summary of the nonuser states' (n = 25) responses. Nonusers included those states that were identified in Question 1 on the survey instrument as either having never used but planning to use (n = 12) or having never used and not planning to use (n = 13) interactive computers in state welcome centers.

Respondents were asked to rate the reasons interactive computers were not being used in their state. Each reason could be

rated as N/A (not applicable = 0), or from 1 = not at all important to 5 = extremely important. Table 15 contains a summary of their responses to the following six reasons for not using computers:

- Q26.1 Lack of knowledge about or exposure to interactive computers.
- Q26.2 The cost of interactive computer systems would be too high.
- Q26.3 Have never been contacted by outside computer vendor.
- Q26.4 Do not think that customers would use or be satisfied with interactive computers.
- Q26.5 There would be too much training required for center personnel.
- Q26.6 The quality of information given to customers would decrease.

Table 15.--Reasons for not using computers.

Reason		n	Mean	Std. Dev.
Q26.1	Lack of knowledge	22	.91	1.44
Q26.2	Cost	25	3.00	2.10
Q26.3	Lack of vendor contact	22	.45	.80
Q26.4	Negative use/satisfaction	23	1.74	2.00
Q26.5	Training	23	.65	.78
Q26.6	Decrease quality	22	1.45	1.57

The reason rated the highest by nonusers ( $n = 25$ ) was Q26.2, cost, with a mean of 3.00. Thus, the most important reason for not using interactive computers, on the average, was the perceived high cost of interactive computer systems. The least important reason for not using interactive computers, on the average, was the lack of

contact by outside computer vendors. Ten states listed other reasons for not using interactive computers. These reasons included the following statements: have not used, but are planning to use computers; current systems are not yet perfected; cost; poor reports from other states using computers; domination of systems by youth; lack of usage by older adults; building limitations; negative results of a trial system with an independent company; current usage of system that interacts with the staff; and preference for the personal touch.

Nonuser respondents were asked what they thought the approximate initial cost for one interactive computer would be to their department or state. Their responses are summarized in Table 16. Of the 25 nonuser respondents, 12 (48%) thought the approximate initial state or department cost for one interactive computer would be more than \$3,000. Only 16% thought there would be no cost to their state or department.

Table 16.--Nonusers: Cost to department or state for one computer  
(n = 25).

Cost	Frequency	Percent
More than \$5,000	7	28.0
\$3,001-\$5,000	5	20.0
No cost	4	16.0
No basis for answering	9	36.0



All 25 nonusers responded to the question asking how much computer training they thought would be required for welcome center personnel if interactive computer systems were to be placed in their state welcome centers. Their responses are summarized in Table 17. Of the 25 respondents, 8 (32%) thought training would require two hours or less. Thus, more than half of the respondents (52%) thought training would require more than two hours, and 36% thought it would require more than five hours.

Table 17.--Nonusers: Amount of training required (n = 25).

Amount of Training	Frequency	Percent
None	4	16.0
1-2 hours	4	16.0
3-4 hours	4	16.0
5-6 hours	4	16.0
More than 6 hours	5	20.0
No basis for answering	4	16.0

### Summary

Tables 14 through 17 contained summaries of data collected from the 25 states identified as nonusers. Nonusers included those states that were identified in Question 1 as either having never used but planning to use or having never used and not planning to use interactive computers in state welcome centers. Questions 26 through 28 from the survey instrument were included in this section.

Of the 25 states identified as nonusers, 12 were planning to use and 13 were not planning to use computers. The most important

reason given by these 25 states for not using interactive computers, on the average, was the perceived high cost of interactive computer systems (mean = 3.00).

Of the 25 nonuser respondents, 12 (48%) thought the approximate initial state or department cost for one interactive computer would be more than \$3,000. Only four states (16%) thought there would be no cost to their state or department.

More than half of the respondents (52% of the 25 states) thought training would require more than two hours, and 36% of the 25 states thought training would require more than five hours.

#### Possible Factors Affecting Usage/Nonusage

The first part of this chapter was a summary of state usage and computer information, and the second part included a summary of nonusage information. This section includes an examination of the possible factors that could affect such usage or nonusage of interactive computer systems at state welcome centers.

All 45 state respondents were asked how familiar they were with interactive computer systems. Of the possible 45 respondents, 44 answered the question regarding familiarity. Table 18 contains a summary of their responses. All but six responses (86.4%) fell in the somewhat familiar category. Only one respondent (2.3%) indicated that he/she was not familiar at all and five respondents (11.4%) indicated that they were very familiar with interactive computer systems.

Table 18.--Familiarity with interactive computer systems (N = 44).

Familiarity	Frequency	Percent
Not familiar at all	1	2.3
Somewhat familiar	38	86.4
Very familiar	5	11.4

Two groups (A = current user states and states planning to use computers; B = discontinued user states and states never having used and not planning to use computers) were compared with regard to computer familiarity to determine whether a significant difference existed. Table 19 illustrates the findings of this analysis.

Table 19.--Usage and familiarity comparison.

Usage	Number of Responses		Total
	Somewhat Familiar	Very Familiar	
Current & plan to use	17	5	22
Discontinued & no plan	21	0	21
Total	38	5	43

Chi-square = 5.401, df = 1, p = .020, significant at .05.

The findings of the chi-square test indicated that there was a significant difference between the two groups' level of familiarity with interactive computers (chi-square = 5.401, df = 1, p = .020,

significant at .05). Specifically, the directors of states using or planning to use computers were more familiar with interactive computers than were those of states that had discontinued usage and not planning to use computers. Thus, the director's level of familiarity with interactive computers might affect the state's usage of interactive computers.

In addition to examining usage and familiarity, data on center usage were collected for analysis. All 45 state respondents were asked to fill in the approximate number of customers (tourists) who used their state welcome centers annually. They were asked to put the total number for all welcome centers combined. Table 20 is a summary of the responses for current user states, discontinued user states, states not currently using but planning to use, states not using and not planning to use interactive computer systems, and all state respondents combined.

Table 20.--Total number of annual customers at all state welcome centers.

State Usage	N	Mean (Millions)	Std. Dev.
Current users	11	4.6	5.12
Discontinued	9	1.8	.94
No, but plan to use	10	1.0	.86
No and not planning to use	12	1.4	1.69
Combined (all states)	42	2.2	3.10

Of the 45 possible responses, 42 responses were obtained. Of the three states not responding, two were from the group not

currently using but planning to use computers, and the other state was from the group not using and not planning to use interactive computers. The mean for the current users, 4.6 million, was higher than that for any of the other categories. Thus, on the average, each state currently using computers had 4.6 million customers annually visit their state welcome centers. The means for the other three groups were all less than two million. The combined mean for all 42 state respondents was 2.2 million.

User groups (users = current and discontinued; nonusers = no, but plan to use and not planning to use) were compared to the number of annual customers to determine whether a significant difference existed. Table 21 illustrates the findings of this analysis.

Table 21.--Usage and number of welcome center customers comparison.

Usage	Number of Responses			Total
	At Most .6 Million	Between .6 & 2 Million	2 Million or More Customers	
Users	6	2	12	20
Nonusers	8	11	3	22
Total	14	13	15	42

Chi-square = 11.848, df = 2, p = .003, significant at .05.

The findings of the chi-square test indicated that there was a significant difference between the number of annual customers at state welcome centers in user and nonuser states (chi-square =

11.848,  $df = 2$ ,  $p = .003$ , significant at .05). Specifically, the analysis indicated that user states had a higher number of welcome center customers annually than nonuser states. Thus, the number of state welcome center customers might influence states' usage of interactive computers.

In addition to examining familiarity and number of welcome center customers annually, data on the number of centers were collected from each state. All 45 state respondents were asked to fill in the number of their state welcome centers that were staffed and unstaffed. User states ( $n = 20$ ) also were asked to fill in the number of state welcome centers with interactive computers that were staffed and unstaffed. Table 22 contains a summary of their responses.

For states currently using computers, the mean number of staffed welcome centers was 9.82. States that had discontinued usage had, on the average, close to 11 staffed centers. The mean number of staffed welcome centers was 6.83 for states planning to use computers. States that had never used and were not planning to use computers averaged between 9 and 10 staffed welcome centers. Because more than half of the states reported having only staffed centers, all state responses for staffed centers are grouped by frequencies in Table 23.

Table 22.--Number of welcome centers--means.

Centers	n	Mean	Std. Dev.
<u>Current Users</u>			
Staffed centers	11	9.82	3.76
Unstaffed centers	2	10.00	11.31
Staffed--computers	11	6.46	4.13
Unstaffed--computers	1	3.00	0
<u>Discontinued</u>			
Staffed centers	9	10.78	5.36
Unstaffed centers	1	2.00	--
Staffed--computers	6	8.33	2.81
Unstaffed--computers	0	0	0
<u>No, But Plan to Use</u>			
Staffed centers	12	6.83	3.46
Unstaffed centers	0	0	0
<u>No and Not Planning to Use</u>			
Staffed centers	13	9.31	4.29
Unstaffed centers	0	0	0
<u>Combined (All States)</u>			
Staffed centers	45	9.07	4.31
Unstaffed centers	3	7.33	9.24

Table 23.--Number of staffed welcome centers--percentages (N = 45).

No. of Centers	n	Percent	Cumulative F	Cumulative %
1-7	16	35.6	16	35.6
8-10	13	28.9	29	64.6
11 or more	16	35.5	45	100.0

User groups (users = current and discontinued; nonusers = no, but plan to use and not planning to use) were compared to staffed welcome center responses to determine whether a significant difference existed. Table 24 illustrates the findings of this analysis.

Table 24.--Usage and number of staffed welcome centers comparison.

Usage	Number of Responses			Total
	At Most 7 Centers	Between 8 & 10 Centers	11 or More Centers	
Users	4	8	8	20
Nonusers	12	5	8	25
Total	<u>16</u>	<u>13</u>	<u>16</u>	<u>45</u>

Chi-square = 4.188, df = 2, p = .123, not significant at .05.

The findings of the chi-square test indicated that there was not a significant difference (chi-square = 4.188, df = 2, p = .123, not significant at .05) between the number of staffed welcome centers in user (current and discontinued) and nonuser states (no, but plan to use and not planning to use). This finding is consistent with the data as the responses were fairly equally distributed with the exception of states with fewer than seven centers. Thus, the number of staffed state welcome centers does not appear to affect state usage of interactive computers.

Aside from data regarding familiarity, number of annual customers, and number of staffed centers, data on cost also were



collected from each state. Table 25 contains a summary of what all respondents thought the approximate initial cost for one interactive computer was or would be to their department or state. The means were based on responses in which 1 = no cost, 2 = \$1,000 or less, 3 = \$1,001-\$3,000, 4 = \$3,001-\$5,000, 5 = more than \$5,000, and 6 = no basis for answering. Discontinued users (1.77 = no cost to less than \$1,000) and current users (2.09 = \$1,000 or less) rated the cost lower than did other groups. Nonuser ratings, on the average, were between \$1,000 and \$5,000.

Table 25.--Cost--means (N = 36).

Usage	n	Mean	Std. Dev.
Current users	11	2.09	1.87
Discontinued	9	1.77	1.56
No, but plan to use	10	4.30	1.25
No and not planning to use	6	2.66	1.00

User groups (users = current and discontinued; nonusers = no, but plan to use and not planning to use) were then compared to cost responses to determine whether a significant difference existed. Table 26 illustrates the findings of this analysis.

The findings of the chi-square test indicated that there was a significant difference between the way users and nonusers perceived the cost of one interactive computer (chi-square = 8.916, df = 1,  $p = .003$ , significant at .05). Specifically, users found computers to be of no to little cost, whereas nonusers perceived the cost to

be above \$3,000. Thus, the perception of cost may influence state usage of interactive computers.

Table 26.--Usage and cost comparison.

Usage	Number of Responses		Total
	No Cost	Above \$3,000	
Users	15	5	20
Nonusers	4	12	16
Total	<u>19</u>	<u>17</u>	<u>36</u>

Chi-square = 8.916, df = 1, p = .003, significant at .05.

In addition to collecting data on familiarity, number of annual customers, number of staffed centers, and cost, data also were collected on training. Table 27 contains a summary of what all respondents thought the amount of computer training was or would be for welcome center personnel. The means were based on responses in which 1 = none, 2 = 1-2 hours, 3 = 3-4 hours, 4 = 5-6 hours, 5 = greater than 6 hours, and 6 = no basis for answering. The means for current and discontinued users show that these states found welcome center personnel training to take fewer than two hours. The means for nonusers indicate that they thought training would require more than two hours.

Table 27.--Training--means (N = 40).

Usage	n	Mean	Std. Dev.
Current users	11	2.00	1.10
Discontinued	8	1.50	.54
No, but plan to use	11	3.82	1.17
No and not planning to use	10	2.30	1.42

User groups (users = current and discontinued; nonusers = no, but plan to use and not planning to use) were next compared to training responses to determine whether a significant difference existed. Table 28 illustrates the findings of this analysis.

Table 28.--Usage and training comparison.

Usage	Number of Responses			Total
	None	1-2 Hours	3 or More Hours	
Users	7	11	1	19
Nonusers	4	4	13	21
Total	11	15	14	40

Chi-square = 14.306, df = 2, p = .001, significant at .05.

The findings of the chi-square test indicated that there was a significant difference between the way users and nonusers perceived the amount of training required for welcome center personnel (chi-square = 14.306, df = 2, p = .001, significant at .05).

Specifically, users perceived training to require two hours or less, whereas nonusers perceived training to require closer to three hours or more. The nonuser's perceptions of training may influence the state's usage of interactive computers.

### Summary

This section included an examination of the possible factors that could affect usage or nonusage of interactive computer systems at state welcome centers. Tables 18 through 28 contained a summary of data collected from Questions 29 through 31 and Questions 1, 7, 25, 27, and 28 of the survey instrument. Chi-square significance tests were used to investigate the possible differences between user and nonuser states with regard to familiarity with interactive computers, number of annual customers, number of staffed welcome centers, perceived cost of an interactive computer, and training.

As Table 19 illustrated, there was a significant difference between two groups' level of familiarity with interactive computers (chi-square = 5.401,  $df = 1$ ,  $p = .020$ , significant at .05). Specifically, the directors of states using or planning to use computers were more familiar with interactive computers than were states that had discontinued usage and those not planning to use computers.

As shown in Table 21, there was a significant difference (chi-square = 11.848,  $df = 2$ ,  $p = .003$ , significant at .05) between the number of annual customers at state welcome centers in user states (current and discontinued) and nonuser states (no, but plan to use

and not planning to use). The distribution of responses seemed to indicate that user states had a higher number of welcome center customers annually than nonuser states.

An examination of the data presented in Table 24 suggests that there seemed to be no significant difference (chi-square = 4.188,  $df = 2$ ,  $p = .123$ , not significant at .05) between the number of staffed welcome centers in user (current and discontinued) and nonuser states (no, but plan to use and not planning to use). Responses were fairly equally distributed with the exception of states with fewer than seven centers. Based on the chi-square test, there did not seem to be a difference between the number of staffed welcome centers in user and nonuser states.

A significant difference (chi-square = 8.916,  $df = 1$ ,  $p = .003$ , significant at .05) was found between the way users and nonusers perceived the cost of one interactive computer. The results shown in Table 26 indicate that users found computers to be of no to little cost, whereas nonusers perceived the cost to be above \$3,000.

Table 28 illustrated a significant difference between the way users and nonusers perceived the amount of training required for welcome center personnel (chi-square = 14.306,  $df = 2$ ,  $p = .001$ , significant at .05). These results indicated that users perceived training to require two hours or less, whereas nonusers perceived training to require closer to three hours or more.

Thus, the possible factors that could affect the usage of interactive computer systems at state welcome centers include familiarity, number of state welcome center customers, cost, and

training. One factor that did not seem to affect the usage of interactive computer systems at state welcome centers was the number of staffed state welcome centers.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

#### Introduction

This chapter includes a summary of the problem, procedures of the study, and analysis of the data. Conclusions of the study, implications for further research, and the researcher's reflections also are presented.

#### The Problem

The researcher's purpose in conducting this study was to assess the usage and value of interactive computer systems in the state welcome centers, as perceived by state welcome center directors. This investigation was predicated on the need for professionals to deal with the expanding usage of the computer and its potential as a means of effectively communicating needed information to the traveling public.

The study was designed to achieve the following research objectives:

1. Determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States, as perceived by state welcome center directors.

2. Examine possible factors that could affect usage or non-usage of interactive computer systems.

### Procedures of the Study

The survey technique was employed to gather data. The questionnaire and the questions for the mail survey were developed, based on the purpose of the research; the review of related literature; and input from the Michigan Department of Transportation and professionals associated with welcome centers, travel or visitor information programs, the State Travel Information Center Directors' National Association, and the Travel Industry Association.

The questionnaire was pilot tested on a small group of Central Michigan University colleagues, people from the Michigan Department of Transportation in Lansing, and others involved in travel and tourism research who were familiar with interactive computers and this particular study. Following additional revisions generated from a review of the survey instrument by the board of the State Travel Information Center Directors' National Association and the Travel Industry Association Director, the final instrument and cover letter were prepared.

Surveys were mailed to a complete population, the state welcome center or travel information center directors, or their state equivalent, of the 46 states that have state welcome centers. Of the 46 states, 45 (97.8%) responded.

Respondents were asked to provide information regarding usage of interactive computer systems by the traveling public at state



welcome centers. They responded to questions concerning reasons for usage, purposes and quality of usage, system descriptions, satisfaction with computer systems, and information related to the process of computerization. Likert-type scales, numerical and grouped numerical responses, open-ended questions, and check and yes-no responses were used on the survey to collect data.

Responses were transferred to Opscan forms, and the computer analysis was completed using SAS by the Statistical Consulting Group at the Computer Services complex at Central Michigan University. Responses were analyzed using frequency distributions and percentages for descriptive purposes and two-way cross-tabulations and chi-square at the .05 significance level for statistical comparison.

#### Summary of Data Analysis

All 45 states (respondents) were classified into one of four groups: (a) those who were currently using interactive computer systems; (b) those who had previously used, but discontinued usage; (c) those who were not currently using, but were planning to use the systems; and (d) those who were not using and not planning to use computers. For data analysis, the first two groups (those who were currently using interactive computer systems and those who had previously used, but discontinued usage) were referred to as users. The second two groups (those who were not currently using, but were planning to use the systems and those who were not using and not planning to use computers) were referred to as nonusers.

Data were generated separately on both the user and nonuser groups to address the first research objective: to determine and describe the usage and value of interactive computer systems as a means of disseminating tourist information at state welcome centers in the United States.

Of the 20 states identified as users, 11 were current users and 9 had discontinued usage. More than half (65%) of these 20 states had used computers for two years or less, and only two states (10%) had used computers for five or more years. The personal computer (16 states) and the touch-sensitive screen (17 states) were the most common type of computer and mode of interaction used. Subscribers contributed to the payment for the systems in 12 states, and vendors contributed in nine states. Only 5 of the 20 states contributed to the payment for the system, paying \$3,000 to more than \$5,000 for one interactive computer. In 90% of the states ( $n = 20$ ), training had required fewer than two hours.

The most frequently reported uses of the computer were for tourist attraction and recreation information (100% of 20 states), lodging information (95% of 19 states), restaurants (94.4% of 18 states), camping (89.5% of 19 states), and directions (70.6% of 17 states). Other uses reported included reservation systems, videos, and coupons. The most important reasons for using interactive computers, on the average, were to get an additional method to give individualized information to the customers and to increase the amount and quality of information given to customers.

All of the nine states that had discontinued usage appear to have done so due to problems related to the vendor. Either the vendor had gone out of business or the state had had problems with equipment, company servicing, or out-of-date information. Two of the nine states were considering or developing their own state system.

Approximately 84% of the 20 users thought the computer had met their needs somewhat or completely. All users gave the overall system, on the average, close to a good rating.

Of the 25 states identified as nonusers, 12 had never used, but were planning to use interactive computers; 13 states had never used and were not planning to use interactive computers in state welcome centers. The most important reason given by these 25 states for not using interactive computers, on the average, was the perceived high cost of interactive computer systems (mean = 3.00).

Of the 25 nonuser respondents, 12 or nearly half (48%) thought the approximate initial state or department cost for one interactive computer would be more than \$3,000. Only four states (16%) thought there would be no cost to their state or department. More than half of the nonuser respondents (52%,  $n = 25$ ) thought training would require more than two hours, and 36% thought training would require more than five hours.

Additional data were generated on both the user and nonuser groups to address the second research objective: to examine possible factors that could affect usage or nonusage.

Chi-square significance tests were used to investigate the possible differences between user and nonuser states with regard to familiarity with interactive computers, number of annual customers,

number of staffed welcome centers, perceived cost of an interactive computer, and training.

As illustrated in Table 19, a significant difference was found between the two groups' level of familiarity with interactive computers (chi-square = 5.401,  $df = 1$ ,  $p = .020$ , significant at .05). Specifically, the directors of states using or planning to use computers were more familiar with interactive computers than states that had discontinued usage and those not planning to use computers.

As illustrated in Table 21, a significant difference (chi-square = 11.848,  $df = 2$ ,  $p = .003$ , significant at .05) was found between the number of annual customers at state welcome centers at user states (current and discontinued) and nonuser states (no, but plan to use and not planning to use). The distribution of responses seemed to indicate that user states had a higher number of welcome center customers annually than nonuser states.

An examination of the data presented in Table 24 suggested that there seemed to be no significant difference (chi-square = 4.188,  $df = 2$ ,  $p = .123$ , not significant at .05) between the number of staffed welcome centers in user (current and discontinued) and nonuser states (no, but plan to use and not planning to use). Responses were fairly equally distributed with the exception of states with fewer than seven centers. Based on the chi-square test, there did not seem to be a difference between the number of staffed welcome centers at user and nonuser states.

A significant difference was found between the way users and nonusers perceived the cost of one interactive computer (chi-square = 8.916, df = 1, p = .003, significant at .05). The results shown in Table 25 illustrated that users found computers to be of no to little cost, whereas nonusers perceived the cost to be above \$3,000.

Table 28 showed a significant difference between the way users and nonusers perceived the amount of training required for welcome center personnel (chi-square = 14.306, df = 2, p = .001, significant at .05). An examination of these results indicated that users perceived training to require two hours or less, whereas nonusers perceived training to require closer to three hours or more.

Thus, the possible factors that could affect the usage of interactive computer systems at state welcome centers include familiarity, number of state welcome center customers, cost, and training. One factor that did not seem to affect the usage of interactive computer systems at state welcome centers was the number of staffed state welcome centers.

### Conclusions

Based on the findings and within the constraints imposed by the limitations noted in this study, certain conclusions were identified. The most important conclusions include:

1. Public-access interactive computer systems are in existence as a means of disseminating tourist information at state welcome centers. Of the 45 states responding, 71% had either used, were currently using, or were planning to use these systems. Based on

the review of the literature, the existence of interactive computer usage is not surprising. The amount of such usage does seem significant. Technology does have the potential to meet the information needs of the traveling public and of state welcome centers, and a significant number of states have already begun to explore this potential.

2. States currently using interactive computer systems seemed to be fairly satisfied with them. On the average, these 11 states rated their satisfaction with the overall system as close to a good rating. Although states might have had problems with the systems, especially discontinued states, the majority of all user states thought the computer had met their needs somewhat or completely. It seems that computers have been a somewhat successful information tool and that, as interactive technology advances and information on these systems from user states becomes more available, the systems can be better adapted to meet travel information needs. Many of the states not using computers may be waiting for these improvements before getting involved.

3. Most states are allowing private businesses, vendors, to install and maintain their own systems at no cost to the states, as opposed to developing their own systems or purchasing a system tailored to their state needs. Because government agencies might be reluctant to change old methods with innovative technology, especially at public expense, the tendency to use vendors is not surprising.

4. The alliance with vendors seems to have been the major source of the problems reported with the interactive computer systems, especially for states discontinuing usage. All of the nine states that had discontinued usage had done so due to problems related to the vendor. Either the vendor had gone out of business or the state had had problems with equipment, company servicing, lack of information, or out-of-date information. These problems might have been due to smaller companies trying to meet the demands for constant information updates, revisions, and/or additions. Smaller companies are also less likely to be able to supply quality hardware or software or to employ enough personnel to offer quick servicing. Because they are a for-profit business and their profits generally come from subscribers, they also must generate enough subscribers to stay in business. Whereas larger subscribers might be familiar with similar systems and more able to afford the annual fees, smaller subscribers might not. Drawing only larger subscribers limits the amount of information that can be included. Thus, smaller vending companies may have had difficulty meeting the varied needs for computer acquisition, programming, information processing, and marketing.

It also is possible that many vendors began operating their systems in welcome centers with a small amount of information, believing that an operational system would encourage more subscriptions. Yet if visitors use a system that lacks enough information, they might access blank screens or be sent back to the original menu. Not understanding the problem, the customers might



seek help from the staff. A vicious cycle could be created: Customers are unhappy with systems that do not have enough information to be helpful; staff members become frustrated at the additional demands on their time and at customer complaints, and subscribers eventually become dissatisfied. It is possible that vendors might have failed either as a result of the inability of a small company to make a profit or to meet customer, center, or subscriber needs.

States will need more sophisticated selection criteria and procedures to augment their feasibility analysis and bidding process as more companies become involved as vendors. Yet, as stronger companies survive and as computer companies perfect the systems, many of the problems associated with interactive systems might diminish.

In addition, one can also draw the following conclusions:

1. The use of public-access interactive computer systems as a means of disseminating tourist information at state welcome centers is in an early stage of development. Most of these systems are fairly new additions. More than half (65%) of the 20 user states had used computers for two years or less. Of the 25 states not currently using computers, 12 indicated that they were planning to use them. Most states were either in the planning/acquisition phase or the early stages of usage. The findings supporting this conclusion are consistent with the review of the literature.

2. Most states have chosen personal computers and touch-sensitive screens for their public-access interactive computers. These are understandable choices because personal computers and touch-sensitive screens tend to be user-friendly and uncomplicated. The advances in personal computer data storage and processing capabilities give smaller and less expensive computers the capacity to meet the extensive information needs of the traveling public. Some states are using computer graphics, pictures, video or laser disk presentations, voice, computer printouts, and coupons. As technology in these areas advances, such potential will become more sophisticated and less expensive.

3. Most states have chosen to use interactive computers at their state welcome centers as an additional method of individualized information dissemination (Table 8). Interactive computers seem to be viewed as a supplement to and not a replacement for current methods. The computers can be used during nonstaffed periods and can be an alternative method at staffed centers during heavy visitor-usage periods. Although vandalism and building constraints are concerns, computers also offer the potential for individualized information dissemination at unstaffed centers. As such, interactive technology appears to be a viable medium to improve visitor information services by augmenting and complementing existing services.

4. The software programs chosen by user states seem to be designed to meet the information needs of the traveling public. Information areas most frequently reported by user states were for

tourist attraction and recreation, lodging, restaurant and camping information, and directions. The review of the literature supported travelers' need for information in these areas. Other areas used included reservation programs and information on road and weather conditions. Computers offer the potential not only to meet such generic information needs but also to individualize information for and to offer services to each visitor.

5. Certain factors might affect usage of interactive computers at state welcome centers. These factors include familiarity, number of state welcome center customers, cost, and training. One factor that might not affect the usage of interactive computer systems at state welcome centers is the number of staffed state welcome centers.

a. The directors of states using or planning to use computers tended to be more familiar with interactive computers than the directors of states that had discontinued usage and those not planning to use computers. Because states with current or potential involvement with computers would, of necessity, need to know about the systems, this seems logical.

b. User states tended to have a higher number of welcome center customers annually than nonuser states. This seems reasonable because states with a high volume of customers might be eager to try alternate methods of information distribution to alleviate an overload on existing methods.

c. A significant difference was found between the way users and nonusers perceived the cost of one interactive computer. The results indicated that users found computers to be of no to little cost, whereas nonusers perceived the cost to be above \$3,000. This seems to be a logical finding, especially in light of other cost-related results. Whereas 75% of the users reported no cost for one computer, 48% of the nonusers thought that one interactive computer would cost more than \$3,000. The finding is further confirmed by the fact that nonusers rated cost higher than any other reason for not using interactive computers. If computers have been beneficial and the cost has been minimal, as indicated in this study, the erroneous perceptions of states not planning to use computers should be addressed. Vendors might be more than happy to assist with educational programs because this, in turn, might help expand their territory. Educating nonuser states might be a task that the national associations will want to address, as well.

d. A significant difference was found between the way users and nonusers perceived the amount of training required for welcome center personnel. The results indicated that users perceived training to require two hours or less, whereas nonusers perceived training to require closer to three hours or more. Because nonusers were less familiar with computers, it is logical that they might have expected training to require more time than would actually be necessary. Because training perceptions of nonuser states were erroneous, educational steps to correct these perceptions seem

necessary. The national association, perhaps with vendor assistance, might choose to address this issue, too.

e. There seemed to be no significant difference between the number of staffed welcome centers in user (current and discontinued) and nonuser states (no, but plan to use and not planning to use). Responses were fairly equally distributed with the exception of states with fewer than seven centers. It seems reasonable to assume that states with a higher volume of customers would tend to have more staffed centers, but the results did not confirm this. It is possible that state interpretations of what to count as a state welcome center varied from state to state because the definition, included in the instructions section, was not repeated in this question. It also is possible that other factors, such as cost or state emphasis on travel and tourism, might have had an influence. For example, the perceived cost of computers might not have been an issue for smaller states with only a few welcome centers. If these smaller states also had a strong state emphasis on travel and tourism, they might have been eager to try innovative technology.

#### Recommendations for Further Research

Based on the results of this study, the following recommendations for further research are made:

1. Many of the problems, especially for states that had discontinued usage of interactive computers, seemed to be associated with the vendor. Further studies should address this area. As more states either purchase a system or develop their own, a comparison

of the different approaches should be involved. For example, future researchers could compare the cost effectiveness of vendor-operated systems to state-run systems and examine the legal aspects and federal directives associated with commercially operated systems.

2. This study addressed issues at the state level, from an upper-level administrative viewpoint. Further research is needed on interactive technology usage issues at the welcome center personnel level. Issues that need to be addressed include satisfaction, perceived value of the system, perceptions about which information areas are best served with the systems, effects of usage on staff, and observations about customer usage.

3. Additional studies are needed on customer usage and nonusage of interactive computers as a tool for tourist information dissemination. Specific concerns that need to be addressed include user and nonuser profiles, satisfaction with the computer hardware and software, and effect on decision making. More specifically, it would be helpful to know user satisfaction with interaction modes, printouts, computer dialogues, menus, and the amount and quality of information. It also would be useful to know the purposes of usage and the effect of the computer information on decision making. As computer software systems become more sophisticated, they can be written so that information on computer users can be gained while customers are using the computer program to access information. Such on-line information would help create a continuously updated data base, which would be helpful for both research analysis and management decisions.

4. As technology advances, different types of interactive systems will continue to be perfected and joined with audio, laser, video, and other advancing technologies. Research is needed to evaluate these systems and to compare them with other methods of information dissemination. For example, researchers need to address cost effectiveness, site or facility requirements, value and usage of information, operation and maintenance, and user-satisfaction issues.

5. In this study it was revealed that most interactive computer systems have been used at staffed welcome centers. Similar studies at national parks also have been in staffed visitor centers. Yet comments from this survey instrument indicated the desire to use interactive computers during nonstaffed hours and at unstaffed centers. Some companies, such as NCR Corporation, have developed stand-alone traveler information systems similar to the automatic-teller machine (ATM). Further research is needed to explore the current and potential uses of such interactive computers at unstaffed centers. Cost effectiveness, vandalism, site requirements, ease of operation and maintenance, user satisfaction, durability, and appeal are issues of particular importance to computer usage at unstaffed locations.

6. This study was limited to the use of interactive computers as an information-dissemination tool. Many of the welcome center computers used by the states also included reservation systems. The potential for interactive computers to offer services such as

permits, registrations, and reservations was mentioned in the review of literature. Further research on the potential of interactive computers to supply services is needed. As awareness of the potential of interactive computers increases, states, center staff, and customers might become more imaginative and exploratory about the use of interactive computers.

7. The usage of interactive computers as information and service tools has potential application to fields other than national parks and state welcome centers. Research should be expanded to include other government and private areas, such as city recreation or service departments; industrial recreation departments; commercial recreation agencies; metropolitan areas; county service departments; and cultural, historical, and environmental interpretation areas.

8. When evaluating the computer system, it might have been difficult for directors to separate perceptions of the system from perceptions of the vendor. It is possible that the perceived value of the computer might have been biased by the respondents' perceptions of the vendor. The addition of questions concerning vendors and the separation of system and vendor evaluations might help alleviate this problem in future research.

9. Some states, especially discontinued users, were displeased with the amount of information and with out-of-date information contained on their interactive computers. Although this study did not specifically address methods of information processing, the researcher assumed that most states have used hard disks or laser



disks for memory. It also was assumed that vendors have updated information on disks and sent them to welcome centers for on-site insertion into the system.

Other methods can improve this information process dramatically. For example, a networked system updates information at a central data-base site. Information is then transmitted via modems or telephone lines. Thus, information is centrally controlled and processing is expedited. Further research is needed to investigate and comparatively analyze the different methods of information processing. For example, future researchers could investigate cost effectiveness; effect on communication; amount and quality of information; management, staff, and customer satisfaction with the system; accuracy of inquiry processing; and the value of a centralized data base.

### Reflections

As a result of completing this study, the following reflections are made:

1. There might be a need for centralized information related to public-access interactive computers used to disseminate travel and/or visitor information. At the national level for travel, the most reasonable agencies would be the State Travel Information Center Directors' National Association and the Travel Industry Association. Another possibility is the use of national data bases, such as Sabre's "Official Recreation Guide." Accessed through CompuServe, Sabre's data base contains nationwide tourist

information. Potential linkage into international data bases is also a possibility. The NRPA/SCHOLE Network, available through Delphi, offers on-line recreation and park information services throughout the world.

2. Names and contact information generated from this study should be kept active by the State Travel Information Center Directors' National Association.

3. The effectiveness of the use of computers as information tools and as decision aids raises several ethical and legal questions. If systems are financed by subscribers, smaller subscribers might not be able to afford the fees. Because the systems are located on government property, the ethical concern that larger subscribers have an unfair advantage might actually become a legal issue. The use and selection of commercially operated systems also may cause legal and federal scrutiny. States need to give careful consideration to these issues and try to ensure that no group is exploited and that commercially operated systems meet legal and federal requirements.

If computers are used to redistribute usage from one geographic location to another or from one subscriber to another, similar ethical concerns will arise. Under what criteria will computers redirect usage? For which agencies or locations will computers be used to redistribute usage? Who will determine the criteria or agency and location choices? Again, it behooves management to consider carefully the ethical and legal issues associated with the use of computers at government locations.

4. As the travel industry continues to expand, the compatibility of information-processing programs might become more critical at the state, national, and international levels. States need to give serious thought to hardware and software compatibility at each of these levels. It is not hard to envision statewide travel-information data bases that would be compatible not only within each state, but from state to state, and that would also allow for national and, potentially, international linkage. The national association might want to consider the development of a national task force to investigate current and potential usage and value of such compatibility and to establish selection criteria and guidelines to assist states with compatibility, ethical, and legal issues.

5. The findings of this study indicate that the state of the art of public-access interactive computer usage in state welcome centers is current. The surge in computer usage seen in society as a whole seems to have pervaded information dissemination in the travel industry, as well. The high percentage of states that have used, are using, or plan to use public-access interactive computer systems (71% of the 45 states reporting) and the high level of satisfaction reported with this computer usage suggest that computers are playing and will continue to play an important role in travel information dissemination. This is positive news for the traveling public; the incorporation of current technology surely

will serve to enhance the leisure pursuits of travelers because it will improve their ability to make informed choices.

However, the negative side of the findings indicates that many states do not use public-access interactive computers in state welcome centers, nor do they have plans to do so. The results further indicate that the information on which state welcome center directors are basing their decision not to use interactive computers is flawed. They overestimate the cost of equipment and training. These inaccurate perceptions have prevented them from using the technology available. Thus, welcome center customers may have been denied the benefits of an improved method of information dissemination. Higher education programs and/or informational packets/programs developed by vendors and national associations to educate current and prospective welcome center directors should be a priority. The reported satisfaction with the use of public-access interactive computer systems reflects the belief that interactive computers can enhance the delivery of information services to the traveling public and can have a positive influence on leisure choices. Educational programs designed to improve travel information dissemination are an investment that should benefit the travel industry as well as the consumers. This industry is there to serve.

## APPENDICES

## APPENDIX A

### COVER LETTER

Recreation and Parks Administration  
Central Michigan University, Finch 108  
Mt. Pleasant, MI 48859



April 25, 1991

Dear Colleague:

Some states have placed interactive tourist information computers in state welcome centers for the motoring public to use. However, no attempts have been made to assess how many states have been involved with such systems or how successful administrators feel these systems are.

This is the first national survey of this type. The results are of particular importance to many professional organizations and to leaders like you who are trying to make communication decisions about the traveling public. The State Travel Information Center Directors National Association is supporting this study and recently sent you a letter encouraging your cooperation.

In each state with welcome centers, the person most likely to be responsible for state welcome center administration is being asked to represent his/her state on these matters. Your name was selected with the cooperation of the State Travel Information Center Directors National Association. You indicate your voluntary agreement to participate by completing and returning this questionnaire. The survey takes approximately 10 minutes to complete. Please return the survey by May 9, 1991.

You may be assured of complete confidentiality. The survey has the state abbreviation for coding purposes only. Your name will never be placed on the questionnaire. While reports may identify individual states, each participant will remain anonymous.

You may receive a summary of the results by writing "copy of results requested" on the back of the return envelope, and printing your name and address below it. Please do not put this information on the questionnaire itself. If you have any questions or wish to share further information, please write or call me. The telephone number is (517) 774-3021. Thank you for your valuable assistance.

Sincerely,

Rebecca McCann, Assistant Professor

## APPENDIX B

### FOLLOW-UP LETTER





Recreation and Parks Administration  
Central Michigan University, Finch 108  
Mt. Pleasant, MI 48859

June 6, 1991

Dear Colleague:

About five weeks ago I wrote to you seeking your input on interactive computer usage at state welcome centers. As of today we have not yet received your completed questionnaire.

Our research was undertaken because we believe that the input of state directors is important to the development and usefulness of this new technology. I am writing to you again because of the significance each questionnaire has to the usefulness of this study. In order for the results of this study to be truly representative of the opinions of all state directors, it is essential that each state director return his/her questionnaire.

In the event that your questionnaire has been misplaced, a replacement has been enclosed. Please return the completed questionnaire within one week. If you have any questions or wish to share further information, please write or call me. The telephone number is (517) 774-3021. Thank you for your valuable assistance.

Sincerely,

Rebecca McCann,  
Assistant Professor

## APPENDIX C

### THE SURVEY

## INTERACTIVE COMPUTER SURVEY

We would like general information on the use of interactive computers used to give trip planning information to customers at state welcome centers. When you mark your answers on the survey, please be sure to:

1. **Record answers directly on the survey.**
2. **Unless requested to do otherwise, mark only one answer.**
3. **Please add additional comments in the remarks section at the end of the survey.**

For the purpose of clarification, the following definitions will be used:

1. **Welcome centers:** any centers, plazas or areas on highways which are either staffed or unstaffed and which make available tourist information to the traveling public.

2. **Interactive computers:** any computer and/or video system used directly by customers to get travel information. This may be a computer with a computer screen or a slide, video or laser disks display. Customers can select choices, such as geographic regions or restaurant, lodging and tourist attraction information. They can then either touch their selection on a touch-sensitive screen or nearby pad or type the number that corresponds to their choice on a keyboard. Some systems use sound and some offer computer printouts to consumers. Regardless of individual characteristics, these systems should allow customers to interact with the system on their own.

3. **Customer:** a welcome center visitor.

**Thank you in advance for completing the survey.**

1. Have any welcome centers in your state **ever** used interactive computers?
  1. ☐ YES and still are using (Go to #2)
  2. ☐ YES but discontinued (Go to #2)
  3. ☐ NO but are planning to use one (Go to #26)
  4. ☐ NO (Go to #26)
  
2. If you answered **yes to #1**, please indicate the approximate number of years that the system was or has been in use.
  1. ☐ 1 year or less
  2. ☐ 2 years
  3. ☐ 3 years
  4. ☐ 4 years
  5. ☐ 5 or more years
  
3. What brand of computers are being used or were used? (Check all that apply.)
  1. ☐ APPLE
  2. ☐ IBM
  3. ☐ TANDY (Radio Shack)
  4. ☐ Other (Please specify: \_\_\_\_\_)
  5. ☐ No basis for answering
  
4. What type of computers are being used or were used? (Check all that apply.)
  1. ☐ Terminal (Part of a larger system)
  2. ☐ PC (stand-alone)
  3. ☐ Other (Please specify: \_\_\_\_\_)
  4. ☐ No basis for answering
  
5. How do/did customers interact with the computers? (Check all that apply.)
  1. ☐ Keyboard
  2. ☐ Touch-sensitive screen
  3. ☐ Touch-sensitive pad
  4. ☐ Other (Please specify: \_\_\_\_\_)
  
6. Please check any of the following which contribute(d) to the payment of the system. (Check all that apply.)
  1. ☐ Vendor
  2. ☐ Subscribers
  3. ☐ State
  4. ☐ Users
  5. ☐ Other (Please specify: \_\_\_\_\_)
  
7. What was the approximate **cost to your department or state** for one interactive computer?
 

(1). <input type="checkbox"/> more than \$5,000	(4). <input type="checkbox"/> \$1,000 or less
(2). <input type="checkbox"/> \$3,001 - \$5,000	(5). <input type="checkbox"/> no cost
(3). <input type="checkbox"/> \$1,001 - \$3,000	(6). <input type="checkbox"/> No basis for answering

8. What factor(s) influenced your decision to use interactive computers?  
Please rate each area from 1 - 5 by circling the appropriate number.  
(1= not at all important and 5= extremely important)

**REASONS FOR USE**

- (1). 1 2 3 4 5 We wanted to reduce customer information demands on center personnel.
- (2). 1 2 3 4 5 We wanted an additional method to get individualized information to the customers.
- (3). 1 2 3 4 5 We wanted to increase the amount and quality of information given to customers.
- (4). 1 2 3 4 5 We wanted to reduce the amount of time it took for customers to receive tourist information.
- (5). 1 2 3 4 5 Other (Please specify:\_\_\_\_\_)

9. Overall, how has (did) the interactive computer system met your above needs (reasons for use)?

1. [ ] not met at all    2. [ ] met somewhat    3. [ ] met completely

Please rate your satisfaction with only the following computer areas that are (were) a part of your system by checking the appropriate box.

1. Very Poor 2. Poor 3. Ave 4. Good 5. Very Good

**COMPUTER AREAS**

10. COMPUTER SCREEN  
11. COMPUTER GRAPHICS  
12. VIDEO PICTURES  
13. AMOUNT OF INFORMATION  
14. QUALITY OF INFORMATION  
15. EASE OF USE  
16. SPEED OF INTERACTION  
17. QUALITY OF SOUND  
18. QUALITY OF PRINTOUTS  
19. RESERVATION SYSTEM


Please rate the **outcomes** of the following computer areas that are (were) a part of your system by checking the appropriate box.

1. Very Poor 2. Poor 3. Ave 4. Good 5. Very Good

**OUTCOMES**

20. REDUCED DEMANDS ON STAFF  
21. CUSTOMER USAGE OF SYSTEM  
22. CUSTOMER SATISFACTION


Please rate the **overall system** by checking the appropriate box.

1. Very Poor 2. Poor 3. Ave 4. Good 5. Very Good

23. OVERALL SYSTEM RATING

--	--	--	--	--

24. For which of the following purposes are (were) interactive computers in your state being used?

- |  |                             |   |
|--|-----------------------------|---|
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Road & weather conditions                   |
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Restaurant information                      |
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Lodging information                         |
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Tourist attraction & recreation information |
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Camping information                         |
| <input type="checkbox"/> YES                           | <input type="checkbox"/> NO | Directions                                  |
| <input type="checkbox"/> Other (Please specify: _____) |                             |   |

25. How much computer training was actually required for welcome center personnel when the system was first installed?

- |   |  |
|---|--|
| (1). <input type="checkbox"/> none      | (4). <input type="checkbox"/> 5-6 hours              |
| (2). <input type="checkbox"/> 1-2 hours | (5). <input type="checkbox"/> greater than 6 hours   |
| (3). <input type="checkbox"/> 3-4 hours | (6). <input type="checkbox"/> no basis for answering |

If your state is **CURRENTLY USING** interactive computers, **GO TO #29.**

26. For what reasons are interactive computers **NOT being used in your state?** Please **rate each area** from 1 - 5 **by circling** the appropriate number. (1= not at all important and 5 = extremely important) Circle **N/A** if the reason does not apply.

If your state has **discontinued usage**, please go to (8), circle discontinued and specify the reasons for discontinuing.

#### **REASONS FOR NOT USING**

- (1). N/A 1 2 3 4 5 Lack of knowledge about or exposure to interactive computer systems.
- (2). N/A 1 2 3 4 5 The cost of interactive computer systems would be too high.
- (3). N/A 1 2 3 4 5 Have never been contacted by outside computer vendor.
- (4). N/A 1 2 3 4 5 Do not think that customers would use or be satisfied with interactive computers.
- (5). N/A 1 2 3 4 5 There would be too much training required for center personnel.
- (6). N/A 1 2 3 4 5 The quality of information given to customers would decrease.
- (7). N/A 1 2 3 4 5 Other (Please specify: \_\_\_\_\_)
- (8). **Discontinued:** (Please specify reasons) \_\_\_\_\_

If your state has discontinued usage, please **GO TO #29.**

27. What do you think the approximate initial cost for one interactive computer would be to your department or state?

- (1). ☐ more than \$5,000                      (4). ☐ \$1,000 or less  
 (2). ☐ \$3,001 - \$5,000                      (5). ☐ no cost  
 (3). ☐ \$1,001 - \$3,000                      (6). ☐ no basis for answering

28. If interactive computers were to be placed in your state welcome centers, how much computer training do you think would be required for welcome center personnel?

- (1). ☐ none    (4). ☐ 5-6 hours  
 (2). ☐ 1-2 hours    (5). ☐ greater than 6 hours  
 (3). ☐ 3-4 hours    (6). ☐ no basis for answering

29. How familiar are you with interactive computer systems?

Please check the appropriate response.

1. ☐ Not familiar at all (no reading or usage)  
 2. ☐ Somewhat familiar (average reading and usage)  
 3. ☐ Very familiar (extensive reading and usage)

30. What are the approximate number of customers (tourists) using your state welcome centers annually? ( Put total number for all welcome centers combined.)

31. If you have **never used** a system, please indicate how many welcome centers in your state are staffed and unstaffed. If you **have used or are using** a system, please indicate how many welcome centers in your state are staffed and unstaffed and how many of these use or used an interactive computer system.

#of welcome centers

#of centers with computers

1.  <---- STAFFED ----> 3.

2.  <---- UNSTAFFED ----> 4.

## REMARKS SECTION

Please add any further comments which you feel would be helpful in assessing interactive computer usage. **USERS please describe your system.**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page or a sheet of stationery. There is no handwriting or other markings on the page.

**Thank you for your time and cooperation. Please return this survey by May 9, 1991 in the enclosed stamped return envelope to:**

**Rebecca McCann, Assistant Professor**

**RPA Department, Finch 108**

**Central Michigan University**

**Mt. Pleasant, MI 48859**



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