This is to certify that the

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Michigan Extension Agents' Use of Information Sources and Channels

presented by

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MICHIGAN EXTENSION AGENTS' USE OF INFORMATION SOURCES AND CHANNELS

By

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ABSTRACT

MICHIGAN EXTENSION AGENTS' USE OF INFORMATION SOURCES AND CHANNELS

By

Mehdi Momin-Khowaja

MSU Extension agents are important players in the dissemination of diverse materials to their clients on a technical, educational and organizational level. These individuals not only provide educational programs and information to their clients, but also assist in the implementation of a given program. However, what has been unclear is how these agents identify their sources and the channels used to distribute this information. Therefore, the purpose of this study was designed to identify the sources from which extension agents receive their job-related information and the methods used to delivery this information to their clients. A survey was designed and distributed to a sample of 188 extension agents within Michigan State University Extension.

Analysis of the data showed that agents are generally interested in receiving and delivering information through personal information sources, in addition to using the electronic computer medium. To further determine agents' preferred mode, results revealed that more-experienced agents are less willing to use electronic and computer information medium relative to their younger, less-experienced counterparts. Agents were also queried on their willingness to receive computerized training. Of these respondents, indicated a need to pursue more-contemporary avenues as part of their everyday tasks.

I dedicate this work to my parents, Qasim Ali Perji and Kulsoom Bai, for their love, guidance, and continuous support throughout my personal and professional growth.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AEE: Agricultural and Extension Education

ANOVA: Analysis of variance

ANRECS: Agriculture and Natural Resources Education and Communication Systems

AOE: Area of Expertise

DTN: Data Transmission Network

DVC: Desktop Video Conference

MSU: Michigan State University

MSUE: Michigan State University Extension

RRIP: Rapid Response Information Program

SPSS: Statistical Package for the Social Science

UCRIHS: University Committee on Research Involving Human Subjects

Chapter 1

INTRODUCTION

For over eight decades, Michigan State University Extension (MSUE) has provided educational programs to people throughout Michigan. A diversity of communication sources and channels have been utilized to meet this challenge. For MSUE, this requires that each of the 83 affiliated counties maintain their own extension agents, whose primary role is to provide information and educational programs to county residents with the help of on-campus faculty members. For the extension agents, meeting the information needs of the clientele can be challenging. It becomes imperative for agents to look for information related to their field from different sources. According to Radhakrishna and Thomson (1996), agents seek information to carry out their day-to-day work. Agents always searched a variety of information from different sources not only for their own knowledge, but also to meet the information needs of their clients.

Agents are the means for MSUE to diffuse useful and practical information to their clients. Several studies have been conducted to assess the media used to disseminate information by extension agents, e.g. Burns & Anderson (1973); Shi & Evans (1991). These studies concluded that information provided to clients stems primarily from agriculture journals, extension publications, farming magazines, and extension specialists.

Unfortunately, rapid changes in electronic media technology have forced these organizations to reassess their education efforts within the last ten years. This is partially due to the fact that electronic media improve accuracy, speed, and information

availability. Today, many of the agents rely on this contemporary technology to upgrade their own knowledge and skills. In fact, Agnew (1991, p. 34) predicted that

> State Extension Directors perceived that program delivery approaches will change in the next five years. These changes include increased use of electronic communications and instructional devices. The electronic changes most often mentioned were increased use of telecommunication as a mode of delivery, access to electronic data sources, interactive instructional video, and increased use of computer technology.

Different Cooperative Extension Services provide many electronic services all over the United States. Their intention is to provide information in a timely manner to their clients. In a recent study, Newman (1999) reported on the dissemination of material through automated telephone message services in the United States. A survey was conducted to determine which state Extension Services provide information services to the public through English and Spanish automated audio messages. Newman states in her research that information delivery through technology services has rapidly expanded and changed during the past decade.

For MSUE, this change in communication strategy is of great importance. Extension is a primary resource of information to agents; by understanding the agents' needs, MSUE is better able to assist them in disseminating information to their clients, which ultimately allows for a more efficient product delivery service to the citizens of Michigan. Therefore, it is imperative that extension agents be surveyed to determine what information sources they use to enhance their knowledge and the channels they use to deliver information to their clients.

Statement of Problem

According to Bay (1980), extension agents rely heavily on two organizational sources of information: (1) internal and (2) external. Internal sources include fact sheets, research findings, pamphlets, and other source materials published by extension services. External information sources are secondary alternatives because they are not always available. Now it becomes imperative to see what sources and channels are most in use by our agents in receiving job-related information and delivering information to clients. Various sources and channels are available for our agents to upgrade their knowledge and skills in terms of gaining information and delivering it to their clients. In this regard, MSUE has not made an adequate effort to determine the agents' sources from which they receive job-related information and the channels/methods by which they deliver the information to their clients. To ensure the effectiveness of disseminating information, it is important to determine the sources and channels used for achieving long-term goals in today's high-tech information world.

Purpose of the Study

The purpose of this study is to identify the sources from which extension agents receive their job-related information and the channels/methods of its delivery to their clients. Results of this study will be extremely valuable in evaluating the usage of various sources and channels. It will also be helpful for MSUE to design new programs to increase the effectiveness of the use of information sources and channels by their extension agents.

Objectives

1. To ascertain what sources of information extension agents use to receive job-related information.
2. To ascertain what channels or methods extension agents use to deliver information to their clients.
3. To identify extension agents' demographic characteristics that predict the use of sources and channels of information.
4. To identify in what specific area they need training to upgrade their knowledge and skills in communication methods.

Research Questions

Research question # 1.	What are the selected sources that extension agents use to receive job-related information?
Research question # 2.	What are the selected channels or methods that extension agents use to deliver information to their clients?
Research question # 3.	Is the age of an extension agent associated with the use of sources and channels?
Research question # 4.	Do the years of work experience of an extension agent influence the use of sources and channels?
Research question # 5.	Do male agents differ from female agents in the uses of sources and channels?
Research question # 6.	Does the level of education of an extension agent impact the use of sources and channels?
Research question # 7.	Does the primary area of program responsibility of an extension agent impact the use of sources and channels?
Research question # 8.	Does the current position of an extension agent impact the use of sources and channels?

Research question # 9. What type of training programs do extension agents prefer to upgrade their skills in the communication of sources and channels?

Definition of Terms

The information in this section will help in understanding the research more completely by defining key terms and explaining the context in which they are used.

Demographics: Characteristics of interest to this study are: age, sex, education level, and primary area of program responsibility.

Clientele: Recipients of MSUE Educational Programs (e.g., Farmers, Livestock Producers, Urban and Rural Citizens etc).

Source: "A *source* is an individual or an institution that originates a message." (Rogers, 1995, p.194).

Channel: "A channel is the means by which a message gets from the source to the receiver." (Rogers, 1995, p.194).

Campus Extension Specialists: Extension specialists are members of the MSU campus faculty. They serve in the departments that generate the basic knowledge that extension programs transmit to the public (Michigan State University Extension).

Extension Agriculture and Natural Resources Agents: Extension agriculture agents work with customers engaged in the production, processing and distribution of agricultural products (Michigan State University Extension).

Extension Community and Economic Development Agents: Extension agents in community and economic development plan, develop and conduct educational programs and provide technical assistance to business, government, economic and community organizations (Michigan State University Extension).

Extension Children, Youth and Family Agents: The Extension 4-H youth agent is an educator-manager. Agents are responsible for providing opportunities for young people to develop leadership potential, citizenship responsibility and productive capacity under the volunteer leadership of adults and older youths (Michigan State University Extension).

Area of Expertise Teams: Area of Expertise (AOE) teams involve Extension specialists, agents, researchers and/or stakeholders organized around a particular commodity, interest area and/or issue. They are charged with listening to stakeholders, identifying priorities, planning and providing educational programs, and evaluating program outcomes and impacts.

Limitations

1. The systematic stratified random sample survey involved in the study was confined to the Extension Agents of MSUE who were working in the field.
2. Conclusions for the study will only be applicable to MSUE Agents in Michigan.

Assumptions

The aim of this study was to identify the sources from which extension agents receive their job-related information and their methods of delivery to their clients. An assumption of this study is that extension agents will provide honest and accurate feedback needed for this study.

Chapter 2

REVIEW OF LITERATURE

Introduction

This chapter contains a review of literature related to the study. It is organized into the following sections: Michigan State University Extension (MSUE), extension agents, extension methods, sources and channels of information for extension agents, MSUE's involvement in electronic information dissemination, changes in agricultural communication, agents' role in 2000, and a summary of literature review.

Michigan State University Extension (MSUE)

According to Michigan State University Extension publications, MSUE provides educational programs and services to the people of Michigan. MSUE's aim is to extend resources and research-based knowledge. That is, MSUE's role includes solving problems and identifying issues and concerns of individuals, families, businesses, industry, organizations, agencies and communities throughout the state. Furthermore, MSUE acts as a facilitator of general welfare to the state's citizens for local, state, national and international issues.

MSU Extension works primarily in three different program areas:

- Agriculture and Natural Resources
- Community and Economic Development
- Children, Youth and Family Programs

These three broad areas provide different services to Michigan residents (e.g., educational and technical assistance.) According to MSUE documentation, over one million people are reached annually through direct educational contacts. This fact is compelling, as it comprises a greater out-reach than the traditional modes or methods of media, major events, and publications. In addition, current inventories of over 2000 publications are available to the public. What is more, over 2 million copies of extension publications are printed annually. Such mass media services allow MSUE to reach all 83 counties throughout the state of Michigan, with the primary facet being fieldwork. The Michigan staff consists of more than 450 professionally trained workers with more than 40,000 volunteers who assist in educational programs.

According to MSUE resource material, MSU Extension programs are supported by the Federal Extension Service (CES-U(STDEV)A) in Washington, D.C., Michigan State University, and Michigan county governments. This partnership ensures broad support and enhances responsibility for specialized needs, while capitalizing on shared resources and expertise.

Extension Agents

Extension Agents work in three major areas: Agriculture and Natural Resources, Community and Economic Development, and Children, Youth and Family Programs.

Agents in *Agriculture and Natural Resources* work with customers engaged in the production, processing and distribution of agricultural products as well as the evaluation of educational programs that assist in developing natural resources.

Agents in *Community and Economic Development* plan, develop, and conduct educational programs that ultimately provide technical assistance for businesses, state and local governments, economic and community organizations.

Agents in *Children, Youth and Family Programs* manage different resources for improving health and nutrition practices, while supporting the development of human potential.

The primary purpose of these agents is to provide educational programs and information for their clients. In this regard, extension agents use different sources and channels to receive job-related information and deliver information through different media to their clients. According to Bay (1980), extension agents rely heavily on two organizational sources of information: (1) internal and (2) external. Internal sources include fact sheets, research findings, pamphlets, and other source materials published by the extension service. External information sources are secondary alternatives because they are not always available.

Extension Methods

There are different types of methods that extension agents commonly use to deliver information. Mass media, group and individual or face-to-face extension methods are most commonly used because of their ability to disseminate information at a more personal and/or intimate level. On a larger scale, print and electronic media such as newspapers, radio and television aid extension agents in reaching large numbers of clients simultaneously. However, the method of choice varies from agent to agent relative to their purpose. But in today's fast-paced world, clients prefer to receive their

information in a quicker and more timely manner. According to Siegrist, Labarge, and Prochaska, (1998) "the increasing use of communication technologies such as fax and E-mail by Extension clientele has opened a new avenue to meet client needs. These communication technologies give Extension the opportunity to be more reactive, efficient, and timely in meeting clientele needs."

It has always been a duty of extension agents to provide information in a timely manner that best fits the situation. In this regard Newman, (1999) talks about methods that share information with clientele in today's time. She states, "methods to share information with the public have evolved throughout the 85-year history of the Cooperative Extension Service. Information delivery through technology services has rapidly expanded during the past decade."

To reach all kinds of audiences our agents use different types of methods to deliver information. In this regard, it has become imperative that extension agents be surveyed to find out what sources and methods they use to receive job-related information and through what channels/methods they deliver it to their clients, so that extension can provide all kinds of training in communication methods to make their agents efficient in their fieldwork.

Sources and Channels of Information for Extension Agents

Sources and channels play very important roles in any organization that receives information and delivers it to their clients. Several studies have been made on information use by extension agents, e.g. Burns & Anderson (1973); Shih & Evans (1991). Any source of information for an extension agent is very important in improving

and upgrading his/her knowledge. In this regard, Shih and Evans (1991) describe where field staff get information. They suggest three points for assessing the behavior of local Extension professionals: (1) *Varied communications channels:* For field staff there are many sources that are available, and they use various communication channels to acquire information. Oral communication and personal contact provide a greater opportunity for discussion, clarification and interaction than does written information. (2) *Major use of extension sources:* Field staff prefer short and easy-to-read research material which they can read quickly and use. Extension staff prefer to read more publications from their organization because it is related to their field and geographical area. (3) *Little use of external information sources:* Among field staff, external information sources such as libraries are not appreciated. Agents consider them less important for their information.

Many changes have been made over time to acquire different sources and channels by extension agents. These changes are made because of need, innovations in communication media, and availability. If we look at previous studies, agents relied more on oral communications and personal contact, which provide opportunities for discussion, clarification, and interaction. These channels are still effective and in use but information technology and different innovations in communication media have brought great change.

A study was conducted by Shih and Evans (1991) to examine the current agricultural information-seeking behavior of field staff (called Extension advisers) in Illinois, and their attitudes toward various information sources. The purpose of the study was to examine the process by which agricultural Extension field staff members process

and use information to help them achieve their educational goals during a period of rapidly changing information technologies.

In their findings, 235 reported information sources were categorized into three types: oral, written and electronic. Written-only sources accounted for the largest single share (45.9%), followed closely by written and oral combination (43%). Less than three percent used electronic information sources.

Almost a decade has passed since this study. Information and communication technology has brought remarkable changes in communication media. Now it has become imperative to look at the needs and usage of these communication media.

In a similar study, Radhakrishna and Thomson (1996) stated, "what, when and how information is gathered and used by extension agents is of critical importance in meeting the information needs of such agents and the clientele they serve." The purpose of the study was to examine information sources used by extension agents. The first objective was to ascertain the agents' search for and use of information. The second objective was to identify information sources that extension agents most frequently used. The third objective was to ascertain differences, if any, between the frequency of a relationship between information sources and agents' demographic characteristics (age, sex, education level, and primary area of program responsibility).

Radhakrishna and Thomson (1996) studied eight randomly selected states: Iowa, Missouri, Maryland, West Virginia, Georgia, Texas, Colorado, and Oregon. A stratified random sample of 305 agents was drawn from 1,515 extension agents.

The findings indicated that Agents prioritize clients to deliver information. Agents use all sorts of information sources to upgrade their knowledge and deliver it to others.

Older agents communicated more frequently than younger agents with Extension program advisory committees. Male agents differed from female agents by more frequently communicating with Extension specialists, Extension workers in another state, non-Extension university faculty, and state and federal agencies. Female agents are more interested in communicating with community organizations. Regarding educational level, agents with Bachelor degrees communicated more frequently with their immediate supervisors, county commissioners, local schoolteachers and administrators than agents with Masters and Doctorate degrees.

Dike (1982) conducted research on persuasive strategies adopted by the agricultural extension agents of Michigan State University to disseminate new farm technologies to Michigan farmers with research implications for developing countries. He suggested that a network analysis to identify channels of communication among agricultural institutions, agricultural extension agents and farmers be conducted.

MSUE's Involvement in Electronic Information Dissemination

MSUE provides up-to-date research-based agriculture information to clients and extension staff members through different electronic services. The following services are provided by MSU, some with cooperation and collaborations.

In 1989, MSUE implemented an agricultural marketing program with the cooperation of DTN to expand present needs of marketing to Extension staff and clients. The program was first piloted in selected Extension offices throughout the state that housed agents specializing in agricultural marketing. MSUE provided up-to-date information to DTN/FarmDayta services.

In 1994, MSU developed a satellite communication system, called LearnNet. This program is managed by MSUE and its Extension offices statewide. This system is very useful for delivering MSUE's own educational and administrative programs, as well as for other MSU units and nonprofit organizations that are interested in reaching audiences statewide.

In January 1995, MSUE developed another satellite communications program, called Rapid Response Information Program (RRIP), in cooperation with an independent firm, DTN/FarmDayta. DTN/FarmDayta provides weather, marketing, agricultural-based news, and production information via satellite and radio communication. It had more than 158,800 subscribers throughout the U.S. and Canada in 1997.

The RRIP provides timely, high-quality, research-based information to farmers and agribusiness firms. It also provides updated MSU information short, self-contained educational programs, updated information on MSUE seminars and activities and bulletins, and disseminates information to producers quickly and directly.

Siegrist, Labarge, and Prochaska (1998) noted that

> "The increasing use of communication technologies such as fax and e-mail by Extension clientele has opened a new avenue to meet client needs. These communication technologies give Extension the opportunity to be more reactive, efficient, and timely in meeting clientele needs. The Ohio State University Extension Agronomic Crops Team has been reaching crop producers, agronomic service personnel, and consultants with an electronic newsletter via fax and E-mail since 1995."

Harriman and Daugherty (1992) provided insights into the future of Extension Envision Extension information centers that provide immediate access to national subject-matter databases to answer both common and uncommon questions. Future Extension staffing patterns should reflect the difference between clients' needs for

information versus education and provide a staff with skills, facilities, and strategies to meet those needs effectively.

There is a great need for upgrading the knowledge and uses of new technology to receive and deliver information to the client; Shill (1992) noted that major changes are occurring in agriculture information dissemination. Traditional institutions, such as the state agriculture extension, are forced to bring changes and adapt to the emergence of electronic dissemination.

Lynda C. Harriman and Ranee A. Daugherty (1992 p. 27) define their theory for Extension:

> Extension must also identify and preserve what has made it strong and viable for 75 years. It has always practiced a grassroots approach to programming based on the clients' needs. People know, trust, and rely on Extension professionals. These relationships have produced a strong support base and need to be retained as new ones are fostered. Staff with excellent communication, personal relations, and public relations skills will continue to be critical.

Changes in Agricultural Communication

Communications media have also undergone rapid changes. William B. Ward, Head of the Department of Extension Teaching and Information at Cornell University, points out that newspapers and magazines have improved their coverage and content through the development of faster methods of distribution, photo printing refinements, and expanded news services. He also states that farm magazines have become increasingly popular and their readability improved.

There have been many changes in Agricultural Communication. If we look at past decades, these changes are made over time because of innovations in information technology and their adoption.

Agents' Role in 2000

Our key players are our extension agents who are the source and key informants for our clients. It is important that we equip and prepare them to provide better services to our clients. A study was conducted by Bonanno et al. (1988) to ascertain the major roles of county agricultural extension agents in the agricultural technology delivery system in the year 2000. The target population for this study was state directors of cooperative extension (N=67). They were asked to identify the five major roles that agricultural extension agents would play. The scale ranged from 5 (essential) to 1 (not important). Ten statements achieved overall mean ratings of 4.25 and above. Among these statements, one statement with a 4.28 mean was to become proficient in the use of technology, such as microcomputers, to deliver expert production and marketing systems to innovators, larger producers and any other interested producers. Two main points from this study are: "Extension should thoroughly investigate applications for electronic technologies to ensure that implementation achieves the expected benefits," and, "Extension must provide adequate in-service training to ensure proficient staff and the development of new competencies."

Harriman and Daugherty (1992 p. 28) also explained how extension should look towards the 21st century:

> Future Extension staffing patterns should reflect the difference between clients' needs for information versus education, and provide for a staff with skills, facilities, and strategies to meet those needs effectively. Extension professionals must have or acquire expertise in communication and computer technologies. Along with high-tech skills, "high-touch" skills, interpersonal communication, and public relations will continue to be critical.

Summary of Literature Review

We understand that face-to-face and interpersonal communication was appreciated by clients. Research findings show that interpersonal communication provides opportunities for discussion, clarification, and interaction.

Over time many changes have been made in communication media that have affected every organization. Radhakrishna and Martin (1999) state that program delivery will change to meet clientele needs. These changes will continue to occur because of innovations in communication media and clientele needs. In this regard, Harriman and Daugherty (1992) state that there will be challenges for extension agents to provide specialized education to clients. In this regard, extension agents need to collaborate with experts in various disciplines. It becomes imperative that extension agents adopt the communication technology available to them.

This study will determine what sources extension agents use to receive job-related information and the channels/methods of its delivery to their clients. MSUE has always kept disseminating valuable information to its citizens through different methods as a priority. It is imperative that extension agents be surveyed to determine what information sources and channels they use to enhance their knowledge and methods of delivery to their clients. Results of this study will be extremely valuable in evaluating the usage and effectiveness of various sources and channels. It will also be helpful for MSUE to design new programs to increase the usage of different source and channels by their Extension agents.

Chapter 3

METHODOLOGY

Research Design

The primary purpose of this study is to identify the sources from which extension agents receive their job-related information and methods of delivery to their clients.

This chapter includes a description of the sample and population, development of an instrument, procedures used for data collection and a discussion of validity and reliability of data collected.

This study used a systematic stratified random sample methodology to gather information on the research topic. The identification of the population is a critical step in the research process. Two types of population are generally described in the research literature: the "target" population and the "survey" population. According to Rossi et al. (1983), the target population is the audience that the researcher would like to study. The survey population is the population that is actually sampled and for which data may be obtained.

A sample of 188 out of 365 extension agents in three major areas was selected. Their areas of work include: Agriculture and Natural Resources, Community and Economic Development, and Children, Youth and Family Programs.

Instrument Development

The mail questionnaire was designed after specific research questions were developed when considering the objectives of the study. A Likert-type questionnaire was

designed to measure the frequency of use of information sources and channels. The instrument also contained both closed and open-ended questions. The instrument was based on three questions. The first set of questions asked extension agents to identify sources and channels they used to receive job-related information and the method of delivery to their clients on a 5 point scale: 1 = Nothing at all, 2 = A little, 3 = Some, 4 = A fair amount and 5 = A great deal. This question was modified from Suvedi (1996), who measured sources and methods from Farmers' Perspectives in the Michigan State University Extension Summary Report. The second set of questions was about agents' demographic information, and the third set asked extension agents if they prefer training programs to upgrade their knowledge and skills in communication of sources and channels/methods.

Validity, Usability and Reliability

To determine the validity and usability of the instrument, a panel consisting of extension educators and faculty members at Agricultural and Extension Education (AEE) was formed. The panel members were selected based on academic background and their experience in this field. A copy of the instrument was delivered to each panel member for evaluation. Panel members were asked to evaluate each question of the instrument to ascertain if it could be understood, and if the respondents could be expected to answer appropriately.

For reliability, a pilot survey was conducted after getting approval from the University Committee on Research Involving Human Subjects (UCRIHS). As a pre-test,

a survey was sent to fifteen former extension agents on campus. These fifteen agents were not added into the sample. The reliability results are shown below:

Reliability Cronbach's Alpha

Pre-test

Print Information	(Receiving Side .742)	(Delivery Side .741)
Electronic Information	(Receiving Side .581)	(Delivery Side .729)
Computer Information	(Receiving Side .675)	(Delivery Side .372)
Organizational Events	(Receiving Side .841)	(Delivery Side .725)
Personal Sources of Information	(Receiving Side .771)	(Delivery Side .394)

Post-test

Print Information	(Receiving Side .738)	(Delivery Side .756)
Electronic Information	(Receiving Side .684)	(Delivery Side .611)
Computer Information	(Receiving Side .650)	(Delivery Side .754)
Organizational Events	(Receiving Side .768)	(Delivery Side .730)
Personal Sources of Information	(Receiving Side .817)	(Delivery Side .824)

In the pre-test, reliability for Computer information and Personal sources of information in delivery side was very low. But in the post-test it gained points.

Data Collection

An E-mail was sent to district agents, county/multi-county agents and county Extension directors (Appendix A), who were selected using a systematic stratified random sampling, informing them that a questionnaire was being mailed to them and explaining the purpose and importance of the survey. One week later, a package consisting of a cover letter (Appendix B), the questionnaire (Appendix E), with a code number, and a pre-addressed, postage-paid envelope was mailed to selected respondents. The cover letter emphasized the importance of the survey, their prompt response, and the confidentiality of all the information.

One week after the first mailing a follow-up postcard (Appendix C) was mailed as a reminder, and it thanked the respondents if they had already returned the questionnaire. Three weeks after the first mailing, non-respondents were mailed a follow-up letter (Appendix D) with a replacement questionnaire.

The returned questionnaires were coded by the date received. Late respondents were compared to early respondents on selected demographic characteristics to determine whether early respondents differ from late respondents. However, there was no difference found between these two groups.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive and Inferential Statistics (e.g. frequency, mean, percentage, standard deviation, T-test, ANOVA and correlation coefficient etc.) were used to analyze the data. For all statistical tests, a confidence level of 95% was set.

Chapter 4

STUDY FINDINGS

The purpose of this study is to identify the sources from which extension agents receive their job-related information and methods of delivery to their clients. Furthermore, the study determined if selected personal and demographic characteristics have an association or relationship with the sources and channels. This chapter will describe the responses of the survey respondents using tables and narratives of use of sources and channels selected by the respondents. As reported in Chapter 3, 188 questionnaires were mailed to a sample of extension agents in Michigan. Of these, 143 were returned, representing a return rate of 76 percent.

Demographic Profile of Extension Agents

The respondents of the survey were district agents, county/multicounty agents, and county extension directors in Michigan. Selected demographics are displayed in Figures and Tables. Of the survey respondents, 42 percent were male and 58 percent were female (see Figure 1).

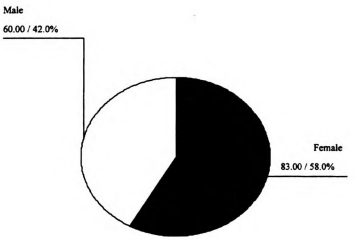

Figure 1. Sex of Respondents

As reported in Figure 2, more than two fifths (46 percent) of extension agents held a bachelors level education while the other half (49 percent) of extension agents indicated that they held a master's degree. Five percent held a doctoral degree.

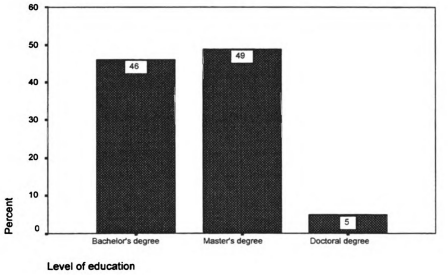

Figure 2. Distribution of Respondents by Level of Education

A distribution of respondents by college at degree commencement is reported in Table 1. About one third (36 percent) of the agents indicated that their highest degree is in Agriculture and Natural Resources with Human Ecology ranking second. Sequentially the colleges reported included Education (10 percent), Business (9 percent) and others (27 percent). Twenty-three respondents did not answer this question.

Table 1. Distribution of Respondents by College Major Highest Degree (N=120)

Characteristics	N	Percent
Agriculture and Natural Resources	43	36
Human Ecology	21	18
Education	12	10
Business	11	9
Other	33	27
Total	120	100

Information on respondents' program areas was collected (Table 2). Results revealed that the majority of respondents was from Children, Youth and Family (including Nutrition Education) and Agriculture and Natural Resources (including Sea Grant) areas.

Table 2. Distribution of Respondents by Primary Areas of Program Responsibility (N=135)

Characteristics	N	Percent
Children, Youth and Family (including Nutrition Education)	60	44.4
Agriculture and Natural Resources (including Sea Grant)	53	39.3
Community and Economic Development	14	10.4
Other	8	5.9
Total	135	100

Table 3 reveals that the majority of respondents were county/multicounty agents (59.6 percent). This was followed by county extension directors (23.5 percent) and district agents (14.7 percent).

Table 3. Distribution of Respondents by Current Position (N=136)

Characteristics	N	Percent
County/multicounty agent	81	59.6
County Extension Director	32	23.5
District Agent	20	14.7
MSU Specialist and double position	3	2.1
Total	136	100

Agents on average were 43 years old and had 11 years of work experience. When asked to indicate their area of expertise, respondents mentioned 33 different areas of expertise. Most frequently mentioned areas included Field Crops, Food Nutrition and

Health, Family Resource Management, Youth Development, Community Development and Leadership (LeadNet).

Print Information Sources and Channels

The types of information sources and channels used by the respondents were categorized as print information, electronic information, computer information, organizational events, and personal sources. Various sources and channels were included in each of these categories.

MSU Extension produces many print materials for extension agents and their clients, which include newspapers, bulletins, and publications. This source provides information for both ends. As shown in Table 4, extension agents were asked to indicate print sources and channels that they use to receive job-related information and delivery to their clients. Findings showed that the most important print source and channel for agents was extension bulletin/publications. On a scale of 1 (nothing at all) to 5 (a great deal), the mean of extension bulletin/publications to receive information was 3.95 (St.Dev.=.96) and to deliver information was 3.68 (St.Dev.=1.22). The second print information source and channel that agents appreciated most was books related to their fieldwork. The mean of books related to fieldwork to receive information was 3.40 (St.Dev.=1.03) and to deliver information was 2.21 (St.Dev.=1.33). All other sources and channels received low mean scores (see Table 4). The scale mean for print information to receive information was 2.80 (St.Dev.=.53) and to deliver information was 2.31 (St.Dev.=0.59).
Over half of the respondents indicated that they use only a little or none of the general magazines, experiment station publications, and printed material from commercial firms

to receive their job-related information. On the other hand, more than three quarters of the respondents indicated that they deliver little or none of the general magazines, specialized magazines, experiment station publications, and printed materials from commercial firms to their clients.

The top five print sources and channels are also ranked in Appendix Table 6 and 7. The most appreciated print source for receiving job-related information was Extension bulletins/publications (Appendix Table 6). The methods/channels through which agents deliver information to their clients were also ranked. Once again, agents appreciated Extension bulletins/publication as their method of delivery to their clients (Appendix Table 7).

Table 4 Print Information Sources and Channels to Receive and Deliver Information by Extension Agents

Sources and Channels of Information			Nothing At all	A little	Some	A fair amount	A great deal	Mean (St.Dev)
Print Information		N	%	%	%	%	%	
General daily/weekly newspaper	Receive	143	7.0	38.5	32.9	16.8	4.0	2.74 (.98)
	Deliver	142	5.6	32.9	30.1	18.9	11.9	2.99 (1.11)
General magazines (such as Successful Farming, Family-Living, Good Housekeeping, etc.)	Receive	143	24.5	37.8	32.9	4.2	0.7	2.19 (.88)
	Deliver	142	64.3	28.0	5.6	1.4	0.0	1.44 (.67)
Specialized magazines (such as Hoard's Dairyman, Parenting, Youth Today, American Demographic, etc.)	Receive	142	11.5	25.2	34.3	21.0	7.7	2.89 (1.11)
	Deliver	141	55.2	20.3	14.7	6.3	2.1	1.78 (1.06)
Extension bulletins/publications	Receive	143	2.1	4.9	21.0	39.9	32.2	3.95 (.96)
	Deliver	142	6.3	12.6	18.9	30.8	30.8	3.68 (1.22)
Experiment Station publications	Receive	142	30.1	28.0	23.1	14.0	4.2	2.34 (1.17)
	Deliver	140	53.8	23.8	10.5	8.4	1.4	1.77 (1.04)
Newsletters from organizations (such as Farm- Bureau, Children's Defense-Fund, etc.)	Receive	141	4.2	30.1	40.6	21.0	2.8	2.88 (.89)
	Deliver	140	34.3	33.6	18.9	8.4	2.8	2.10 (1.07)
Printed materials from commercial firms (such as seed companies, etc.)	Receive	143	20.3	45.5	25.9	7.7	0.7	2.23 (.89)
	Deliver	141	60.8	23.8	10.5	3.5	0.0	1.56 (.82)
MSUE/AOE Team newsletter	Receive	139	18.2	18.9	28.0	20.3	11.9	2.88 (1.28)
	Deliver	138	35.0	21.7	18.9	13.3	7.7	2.35 (1.31)
Books related to your fieldwork	Receive	143	3.5	16.1	31.5	35.0	14.0	3.40 (1.03)
	Deliver	140	42.7	19.6	16.1	11.9	7.7	2.21 (1.33)
Press release articles (from MSUE sources)	Receive	141	10.5	26.6	29.4	25.9	6.3	2.91 (1.10)
	Deliver	141	18.2	21.7	30.1	18.2	10.5	2.81 (1.24)
Special mailings to organizations (such as farm organizations, youth-serving organizations, human service organizations, etc.)	Receive	138	8.4	33.6	37.1	14.0	3.5	2.70 (.95)
	Deliver	141	16.1	28.0	27.3	20.3	7.0	2.74 (1.17)
Scale Mean	**Receive**							**2.80 (0.53)**
	Deliver							**2.31 (0.59)**

The mean can range from 1 (nothing at all) to 5 (a great deal); R=Receive, and D=Deliver

Electronic Information Sources and Channels

In the last few years, agents were presented with new electronic media to receive information and deliver it to their clients, which included produced videotapes, satellite etc. As shown in Table 5, the most important electronic sources and channels for agents were Extension-produced videotapes. On a scale of 1 (nothing at all) to 5 (a great deal), the mean of extension-produced videotapes to receive information was 2.61 (St.Dev.=.94) and to deliver information was 2.50 (St.Dev.=1.11). All other sources and channels such as general TV or radio news, specific TV programs (such as farm, family, youth and community programs, etc.), Satellite LearnNet or other satellite conferences, specific radio programs (such as farm, family, youth and community programs, etc.) received a low mean score (see Table 5). The scale mean for the electronic source to receive information was 2.24 (St.Dev.=.68) and to deliver information was 1.98 (St.Dev.=.62).

The top five Electronic sources and channels are also ranked in Appendix Table 8 and 9. Agents have appreciated Extension-produced videotapes as the most important source through which they receive their job-related information (Appendix Table 8). Once again on the delivery side they have chosen the same source as their method/channel of delivery to their clients (Appendix Table 9).

Table 5 Electronic Sources and Channels to Receive and Deliver Information by Extension Agents

Sources and Channels of Information			Nothing At all	A little	Some	A fair amount	A great deal	Mean (St.Dev)
Electronic Information		N	%	%	%	%	%	
General TV or radio news	Receive	142	19.6	37.1	28.7	12.6	1.4	2.39 (.99)
	Deliver	140	25.2	45.5	19.6	5.6	2.1	2.12 (.93)
Specific TV programs (such as farm, family, youth and community programs, etc.)	Receive	142	37.8	32.2	22.4	5.6	0.7	2.05 (1.27)
	Deliver	141	59.4	25.2	11.9	1.4	0.7	1.57 (.81)
Satellite LearnNet or other satellite conferences	Receive	142	18.2	37.1	29.4	14.0	0.7	2.42 (.97)
	Deliver	140	44.1	23.8	18.2	10.5	1.4	1.99 (1.10)
Specific radio programs (such as farm, family, youth and community programs, etc.)	Receive	142	45.5	34.3	15.4	2.8	1.4	1.80 (.90)
	Deliver	141	47.6	30.1	14.0	4.9	2.1	1.82 (.99)
Extension-produced videotapes	Receive	140	10.5	36.4	34.3	14.7	2.1	2.61 (.94)
	Deliver	138	22.4	25.2	30.1	16.1	2.8	2.50 (1.11)
Scale Mean	**Receive**							**2.24 (0.68)**
	Deliver							**1.98 (0.62)**

The mean can range from 1 (nothing at all) to 5 (a great deal)

Computer Information Sources and Channels

The computer is another source and channel that provides a variety of information. This source and channel is in use by our agents. They use electronic mail and the Internet to receive and deliver information to their clients. As shown in Table 6, the most important computer information source and channel for agents was electronic mail (E-mail). On a scale of 1 (nothing at all) to 5 (a great deal), the mean of electronic mail to receive information was 4.02 (St.Dev.=1.00) and to deliver information was 3.41 (St.Dev.=1.20). The second highest sources and channels were the Internet/World Wide Web and Listservers (such as Crop Observation Reporting Network-CORN, CYF News, Clover Corner News Listserve, etc. All other sources and channels such as

DTN/FarmDayta Services, Extension-developed software packages and commercially produced software packages received low mean scores (see Table 6). The scale mean for the computer to receive information was 2.79 (St.Dev.=.65) and to deliver information was 2.30 (St.Dev.=0.75).

Top five computer information sources and channels are ranked in Appendix Tables 10 and 11. Agents believe that Electronic mail (E-mail) is the most frequent source through which they receive their job-related information. E-mail was ranked #1 in receiving job-related information for agents (Appendix Table 10). Once again in the delivery side agents chose the same source for delivery to the clients as for the receiving side (Appendix Table 11).

Table 6 Computer Information Sources and Channels to Receive and Deliver Information by Extension Agents

Sources and Channels of Information			Nothing At all	A little	Some	A fair amount	A great deal	Mean (St.Dev)
Computer Information		N	%	%	%	%	%	
Internet/World Wide Web	Receive	143	4.2	7.7	28.7	37.8	21.7	3.65 (1.04)
	Deliver	143	18.2	25.2	22.4	23.1	11.2	2.84 (1.28)
DTN/FarmDayta Services	Receive	139	74.1	12.6	7.7	1.4	1.4	1.39 (.81)
	Deliver	138	78.3	13.3	3.5	0.7	0.7	1.26 (.68)
Electronic mail (E-mail)	Receive	143	0.7	8.4	18.9	32.2	39.9	4.02 (1.00)
	Deliver	143	6.3	18.9	23.8	29.4	21.7	3.41 (1.20)
Listservers (such as Crop Observation Reporting Network-CORN, CYF News, Clover Corner News Listserve, etc.)	Receive	140	14.7	16.1	28.7	25.2	13.3	3.06 (1.25)
	Deliver	138	32.2	23.8	22.4	12.6	5.6	2.33 (1.23)
Extension-developed software packages	Receive	141	23.8	32.2	25.9	9.8	7.0	2.43 (1.17)
	Deliver	139	44.1	23.8	15.4	10.5	3.5	2.03 (1.17)
Commercially produced software packages	Receive	138	32.2	25.2	25.2	9.1	4.9	2.27 (1.17)
	Deliver	137	49.7	22.4	14.7	6.3	2.8	1.85 (1.09)
Scale Mean	**Receive**							**2.79 (0.65)**
	Deliver							**2.30 (0.75)**

The mean can range from 1 (nothing at all) to 5 (a great deal)

Organizational Events Sources and Channels

Extension professionals participate in a variety of organizational events every year. These events could serve as sources of information as well as channels that extension agents use to deliver information. Respondents were provided with a list of organizational events and were asked to rate the extent to which they are useful for receiving and/or delivering information. As shown in Table 7, the most important organizational events for agents were Extension meetings, workshops, courses, etc. On a scale of 1 (nothing at all) to 5 (a great deal), the mean for Extension meetings,

workshops, and courses to receive information was 3.87 (St.Dev.=.94) and to deliver information was 3.77 (St.Dev.=1.10) indicating that these were the most frequently used source and channel by extension agents. The second highest sources and channels were events such as AOE training seminars, Statewide events (i.e., ANR Week, Ag Expo, 4-H Exploration Days, CYF-SERIES), Extension/applied research demonstrations (such as field days, family days, festivals), and Community groups, local schools, clubs, associations. The scale mean for the organizational events to receive information was 2.74 (St.Dev.=.63) and to deliver information was 2.60 (St.Dev.=0.62).

In organizational events, extension meetings, workshops, courses etc. were ranked #1 (Appendix Table 12) as a source of information for job-related information. In delivery, once again agents appreciated and considered the same source as their method of delivery to the clients (Appendix Table 13).

Table 7 Organizational Events to Receive and Deliver Information by Extension Agents

Sources and Channels of Information			Nothing At all	A little	Some	A fair amount	A great deal	Mean (St.Dev)
Organizational events		N	%	%	%	%	%	
Extension meetings, workshops, courses, etc.	Receive	143	1.4	5.6	25.9	39.2	28.0	3.87 (.94)
	Deliver	140	4.2	7.7	24.5	31.5	30.1	3.77 (1.10)
Extension/applied research demonstrations (such as field days, family days, festivals, etc.)	Receive	142	12.6	25.2	26.6	21.7	13.3	2.98 (1.23)
	Deliver	139	15.4	17.5	23.1	25.9	15.4	3.09 (1.31)
Private companies' field days, etc.	Receive	142	51.0	28.0	14.7	4.9	0.7	1.75 (.93)
	Deliver	141	57.3	29.4	7.7	2.8	1.4	1.60 (.86)
Organization/association meetings (such as Farm Bureau, Organic Fare, Day Care Provider, etc.)	Receive	139	14.0	33.6	32.9	15.4	1.4	2.55 (.97)
	Deliver	137	16.8	37.1	28.7	11.9	1.4	2.42 (.97)
Statewide events (such as ANR Week, Ag Expo, 4-H Exploration Days, CYF-SERIES, etc.)	Receive	143	7.7	22.4	34.3	20.3	15.4	3.13 (1.16)
	Deliver	141	14.7	30.8	26.6	16.8	9.8	2.76 (1.19)
Professional society meetings	Receive	142	18.9	26.6	23.1	19.6	11.2	2.77 (1.28)
	Deliver	139	35.7	30.1	17.5	10.5	3.5	2.14 (1.14)
AOE training seminars	Receive	143	16.1	14.7	23.1	25.9	20.3	3.20 (1.35)
	Deliver	140	28.7	23.8	23.1	12.6	9.8	2.50 (1.31)
Human service collaborative bodies and regional planning and coordinating councils	Receive	142	19.6	23.8	26.6	18.9	10.5	2.77 (1.26)
	Deliver	140	23.8	25.9	24.5	15.4	8.4	2.58 (1.25)
Community groups, local schools, clubs, associations, etc.	Receive	137	10.5	34.3	30.1	17.5	3.5	2.68 (1.01)
	Deliver	136	4.2	28.0	32.9	19.6	10.5	3.04 (1.06)
State/county fairs	Receive	140	41.3	30.1	16.8	7.7	2.1	1.97 (1.05)
	Deliver	140	26.6	28.0	21.7	15.4	6.3	2.46 (1.23)
Scale Mean	**Receive**							**2.74 (0.63)**
	Deliver							**2.60 (0.62)**

The mean can range from 1 (nothing at all) to 5 (a great deal)

Personal Sources and Channels

For extension agents, personal sources and channels are an old information medium. These sources provide an opportunity to talk face-to-face and build strong and personal relationships with clients. This source and channel will always remain in use because it has been appreciated so long. According to findings in Table 8, the most important personal source and channel was other county agents or MSU Extension specialists. On a scale of 1 (nothing at all) to 5 (a great deal), the mean of other county agents or MSU Extension specialists to receive information was 4.01 (St.Dev.=.85) and to deliver information was 3.51 (St.Dev.=1.11). The second highest source and channel were phone, MSU faculty members, letters/memos, fax etc. All other sources and channels such as supply dealers, salespeople, family friends or neighbors, business consultants, immediate supervisor, representatives of local business organization, state and federal agencies personnel, faculty members at other universities and home visits received a low mean score. The scale mean for the personal source to receive information was 2.84 (St.Dev.=.60) and to deliver information was 2.72 (St.Dev.=0.62).

Personal sources were also ranked. Agents have shown an interest in receiving their job-related information through other county agents or MSU extension specialists. This source was considered #1 in ranking (Appendix Table 14). On the other hand, on the delivery side agents preferred the phone as their method/channel (Appendix Table 15).

Table 8 Personal Sources and Channels to Receive and Deliver Information by Extension Agents

Sources and Channels of Information			Nothing At all	A little	Some	A fair amount	A great deal	Mean (St.Dev)
Personal Sources		N	%	%	%	%	%	
Supply dealers, salespeople, etc.	Receive	138	37.8	25.9	25.2	5.6	2.1	2.05 (1.04)
	Deliver	137	47.6	24.5	14.7	6.3	2.8	1.88 (1.08)
Other county agents or MSU Extension specialists	Receive	142	0.0	4.9	20.3	43.4	30.8	4.01 (.85)
	Deliver	140	3.5	16.1	26.6	30.8	21.0	3.51 (1.11)
Family, friend or neighbors	Receive	142	14.0	44.8	24.5	10.5	5.6	2.49 (1.04)
	Deliver	139	17.5	32.2	29.4	11.2	7.0	2.57 (1.13)
Business consultants	Receive	141	25.9	39.2	21.0	8.4	4.2	2.25 (1.07)
	Deliver	139	33.6	32.9	21.0	5.6	4.2	2.12 (1.08)
Your immediate supervisor	Receive	142	10.5	27.3	29.4	18.2	14.0	2.98 (1.21)
	Deliver	140	13.3	28.0	35.7	13.3	7.7	2.74 (1.10)
Representatives of local business organizations	Receive	139	16.1	40.6	27.3	10.5	2.8	2.42 (.98)
	Deliver	138	19.6	35.7	27.3	10.5	3.5	2.41 (1.04)
State and federal agencies personnel	Receive	142	12.6	32.9	30.1	18.9	4.9	2.70 (1.07)
	Deliver	139	16.8	30.8	29.4	16.1	4.2	2.59 (1.09)
MSU faculty members	Receive	142	7.0	18.2	34.3	24.5	15.4	3.23 (1.13)
	Deliver	140	17.5	32.2	25.9	16.1	6.3	2.61 (1.15)
Faculty members at other universities	Receive	142	18.9	44.1	19.6	13.3	3.5	2.38 (1.05)
	Deliver	139	36.4	37.1	16.8	5.6	1.4	1.96 (.95)
Letters/memos	Receive	141	5.6	27.3	32.2	27.3	6.3	3.01 (1.02)
	Deliver	141	4.2	27.3	32.2	23.1	11.9	3.11 (1.08)
Fax	Receive	142	7.7	25.2	30.1	30.1	6.3	3.02 (1.06)
	Deliver	142	7.0	27.3	29.4	27.3	8.4	3.03 (1.08)
Phone	Receive	142	2.8	13.3	17.5	30.1	35.7	3.83 (1.14)
	Deliver	141	1.4	9.8	19.6	29.4	38.5	3.95 (1.06)
Home visits	Receive	141	29.4	29.4	16.1	17.5	6.3	2.41 (1.26)
	Deliver	141	22.4	16.1	25.2	21.7	13.3	2.87 (1.35)
Scale Mean	**Receive**							**2.84 (0.60)**
	Deliver							**2.72 (0.62)**

The mean can range from 1 (nothing at all) to 5 (a great deal)

Summary of Information Sources and Channels

Table 9 provides the summary of mean ratings of information sources and channels that extension agents used to receive their job-related information and methods of delivery to their clients.

Table 9. Summary of Mean Ratings of Information Sources and Channels.

Scale	Receive Job-related Information Mean (St.Dev.)	Deliver to the Clients Mean (St.Dev.)
Print Information	2.80 (.53)	2.31 (.59)
Electronic Information	2.24 (.68)	1.98 (.62)
Computer Information	2.79 (.65)	2.30 (.75)
Organizational Events	2.74 (.63)	2.60 (.62)
Personal Sources of Information	2.84 (.60)	2.72 (.62)

As shown in Table 9, on the receiving side, personal sources of information received the highest (mean 2.84, St.Dev.=.60). The second most appreciated source for agents to receive their job-related information was print information sources (mean 2.80, St.Dev.=.53). In delivery, once again personal sources of information received the highest (mean 2.72, St.Dev.=.62), more than any other delivery method. The second highest delivery method was organizational events (mean 2.60, St.Dev.=.62). These findings indicate that agents prefer to use personal sources of information for receiving and delivering information to their clients.

Age of an Extension Agent and the Use of Sources and Channels.

To examine the relationships between the agents' sources of information for receiving job-related information and age, bivariate correlation analyses were performed and Pearson correlation coefficients were computed. The results are shown in Appendix Table 1. The results indicated that the relationship between the agent's use of computer information sources and age was low, but statistically significant. It was found that as age increases the use of computer information decreases. The relationship between age and the use of print information, electronic information, organizational events, and personal sources of information showed no significant linear relationship.

In the delivery of information, the relationships between the agents' age and channels or methods for information delivery were determined using Pearson Correlation Coefficient. The results (Appendix Table 2) do not indicate any relationship between agent's delivery of information and age.

Years of Work Experience of an Extension Agent and the Use of Sources and Channels.

To examine the relationships between the agents' sources for receiving job-related information and their work experience, bivariate correlation analyses were performed and Pearson correlation coefficients were computed. The results are shown in Table 10.

Table 10. Relationship between Sources of Information and Years of Work Experience.

Scale	N	Pearson correlation	P-value
Print Information	125	.017	.849
Electronic Information	133	-.018	.836
Computer Information	130	-.135	.125
Organizational Events	127	-.006	.950
Personal Sources of Information	130	-.057	.520

As shown in Table 10, the Pearson correlation coefficient value for all the variables under study was very low. However, although non-significant, the correlation coefficient of computer information indicated that as work experience increases, use of computer information decreases.

To examine the relationships between the agents' channels or methods of information delivery and years of work experience, bivariate correlation analyses were performed and Pearson correlation coefficients were computed. The results are shown in Table 11.

Table 11. Relationship between Channels/Methods of Information and Years of Work Experience.

Scale	N	Pearson correlation	P-value
Print Information	124	.234	.009
Electronic Information	130	.223	.011
Computer Information	128	-.030	.737
Organizational Events	123	.044	.632
Personal Sources of Information	126	.022	.807

As shown in Table 11, the relationship between agents' use of print information for delivery and years of work experience was statistically significant. It was found that as years of work experience increases, uses of print information increases. The obtained Pearson correlation coefficient of .234 denotes a low relationship between print information and years of work experience, but it was significant.

Table 11 also indicates the relationship between agents' use of electronic information for delivery and years of work experience was statistically significant. It was found that as years of work experience increase, the use of electronic information increases. The obtained Pearson correlation coefficient of .223 denotes that the relationship between electronic information and years of work experience was positive.

Male Agents Differ From Female Agents in the Use of Sources and Channels.

To examine the differences by sex of agents' use of sources for receiving job-related information, t-tests were performed. The results are shown in Appendix Table 3.

Appendix Table 3 indicates that there were no significant differences between male and female agents in terms of receiving their job-related information.

On the other hand, in the delivery of information by sex, t-tests were performed. The results are shown in Table 12.

Table 12. Differences in Channels/Methods to Deliver Information by Sex.

Scale	Group	N	Mean (sd)	t-value	P-value
Print information	Male	57	2.36 (0.60)	-.920	.359
	Female	72	2.27 (0.58)		
Electronic information	Male	59	1.98 (0.63)	.004	.997
	Female	76	1.98 (0.61)		
Computer information	Male	58	2.43 (0.76)	-1.67	.096
	Female	74	2.20 (0.74)		
Organizational events	Male	55	2.64 (0.57)	-.587	.558
	Female	72	2.57 (0.65)		
Personal sources of information	Male	57	2.88 (0.57)	-2.64	.009
	Female	73	2.59 (0.64)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

As shown in Table 12, male agents tend to use personal sources to deliver information more than female agents. The difference in use of personal sources of information by sex was statistically significant (p-value .009). There were no other

significant differences found between male and female agents and their methods of information delivery.

Level of Education of an Extension Agent and the Use of Sources and Channels.

To examine the differences by level of education of agents' sources for receiving job-related information, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Appendix Table 4.

Findings in Appendix Table 4 indicate that there were no significant differences in receiving job-related information according to agents' level of education.

To examine the differences by level of education of agents' channels or methods for information delivery, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Appendix Table 5.

Appendix Table 5 indicates that there were no significant differences in the delivery of information to clients according to agents' level of education.

Primary Area of Program Responsibility of an Extension Agent and the Use of Sources and Channels.

To examine the differences by primary area of program responsibility of agents' sources for receiving job-related information, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Table 13.

Table 13. Differences in Sources of Information by Primary Area of Program Responsibility.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	Ag&Nat	48	2.94 (0.50)	5.265	0.007
	CYF	55	2.72 (0.48)		
	CEDev	12	2.46 (0.55)		
Electronic information	Ag&Nat	53	2.10 (0.60)	3.912	0.023
	CYF	56	2.40 (0.68)		
	CEDev	14	2.00 (0.59)		
Computer information	Ag&Nat	52	2.88 (0.68)	1.210	0.302
	CYF	56	2.73 (0.62)		
	CEDev	13	2.62 (0.49)		
Organizational events	Ag&Nat	50	2.69 (0.68)	1.298	0.277
	CYF	56	2.82 (0.52)		
	CEDev	13	2.53 (0.72)		
Personal sources of information	Ag&Nat	52	2.91 (0.60)	1.611	0.204
	CYF	55	2.78 (0.50)		
	CEDev	14	2.64 (0.56)		

Ag&Nat = Agriculture and Natural Resources (including Sea Grant); CYF = Children, Youth and Family (including Nutrition Education); CEDev = Community and Economic Development; The mean can range from 1 (nothing at all) to 5 (a great deal)

As shown in Table 13, significant differences were found in agents' use of print information sources according to their primary area of program responsibility. It was found that Agriculture and Natural Resource Agents differed from Children, Youth and Family and Community Economic Development Agents by receiving more information from print sources.

Table 13 also indicates the significant difference between agents' uses of electronic information and their primary area of program responsibility. It was found that

children, youth and family agents differed from agriculture and natural resource, and community economic development agents by receiving more information from electronic information sources.

To examine the differences by primary area of program responsibility of agents' channels or methods for information delivery, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Table 14.

Table 14. Differences in Channels/Methods of Information by Primary Area of Program Responsibility.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	Ag&Nat	49	2.31 (0.61)	2.214	0.114
	CYF	53	2.31 (0.54)		
	CEDev	12	1.94 (0.52)		
Electronic information	Ag&Nat	52	1.92 (0.56)	1.480	0.232
	CYF	54	2.04 (0.61)		
	CEDev	14	1.75 (0.41)		
Computer information	Ag&Nat	52	2.40 (0.79)	1.165	0.316
	CYF	56	2.18 (0.67)		
	CEDev	11	2.31 (0.76)		
Organizational events	Ag&Nat	48	2.62 (0.60)	1.658	0.195
	CYF	54	2.65 (0.59)		
	CEDev	13	2.31 (0.68)		
Personal sources of information	Ag&Nat	51	2.84 (0.67)	2.210	0.114
	CYF	52	2.63 (0.50)		
	CEDev	13	2.55 (0.49)		

Ag&Nat = Agriculture and Natural Resources (including Sea Grant); CYF = Children, Youth and Family (including Nutrition Education); CEDev = Community and Economic Development; The mean can range from 1 (nothing at all) to 5 (a great deal)

As shown in Table 14, there were no significant differences in delivery methods according to agents' primary area of program responsibility.

Current Position of an Extension Agent and the Use of Sources and Channels.

To examine the differences by current position of agents' sources for receiving job-related information, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Table 15.

Table 15. Differences in Sources of Information by Agents Current Position.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	District Agent	18	2.93 (.45)	1.896	0.155
	County/multicounty Agent	74	2.75 (.55)		
	County Extension Director	28	2.94 (.45)		
Electronic information	District Agent	20	2.17 (.63)	0.578	0.562
	County/multicounty Agent	77	2.20 (.67)		
	County Extension Director	32	2.34 (.67)		
Computer information	District Agent	19	2.95 (.65)	2.116	0.125
	County/multicounty Agent	76	2.69 (.62)		
	County Extension Director	30	2.92 (.66)		
Organizational events	District Agent	19	2.75 (.66)	0.698	0.500
	County/multicounty Agent	74	2.70 (.65)		
	County Extension Director	30	2.87 (.61)		
Personal sources of information	District Agent	18	3.01 (.67)	1.796	0.170
	County/multicounty Agent	78	2.77 (.54)		
	County Extension Director	30	2.95 (.69)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

As shown in Table 15, there were no significant differences in agents' sources for receiving job-related information according to their current position.

To examine the differences by current position of agents' channels or methods of information delivery, an ANOVA and post-hoc Tukey procedure was performed. The results are shown in Table 16.

Table 16. Differences in Channels/Methods of Information by Current Position.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	District Agent	18	2.36 (.66)	0.681	0.508
	County/multicounty Agent	73	2.28 (.57)		
	County Extension Director	29	2.42 (.54)		
Electronic information	District Agent	20	2.02 (.55)	1.240	0.293
	County/multicounty Agent	76	1.92 (.61)		
	County Extension Director	30	2.12 (.62)		
Computer information	District Agent	19	2.53 (.86)	2.043	0.134
	County/multicounty Agent	76	2.19 (.67)		
	County Extension Director	28	2.41 (.82)		
Organizational events	District Agent	19	2.71 (.68)	0.969	0.383
	County/multicounty Agent	72	2.55 (.60)		
	County Extension Director	28	2.72 (.60)		
Personal sources of information	District Agent	17	3.06 (.78)	4.10	0.019
	County/multicounty Agent	74	2.61 (.54)		
	County Extension Director	31	2.81 (.67)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

As shown in Table 16, significant statistical differences were found according to an agents' current position and personal sources of information for delivering information to their clients. It was found that district agents deliver more information through personal sources of information than county/multicounty agents and county extension directors. There were no other statistically significant differences reported in any other methods.

Training Programs for Extension Agents to Upgrade Their Skills in the Communication of Sources and Channels.

Agents were asked what training programs they prefer for upgrading their skills in the communication of sources and channels. They were asked to give three choices for receiving and delivery by giving first, second and third priorities. Out of 143 respondents, only 42 respondents responded to this query shown in Table 17.

Table 17. Training Areas for Receiving and Delivery

Training Areas	Source	Priority 1	Priority 2	Priority 3
Internet/WWW	Receive	15	6	0
	Deliver	12	4	1
Electronic information	Receive	3	3	1
	Deliver	3	3	1

In ranking, the first choice for receiving training was the Internet or World Wide Web. Fifteen respondents asked for training in this area. They considered this item as their first priority.

The second choice for receiving training was electronic information including Desktop Video Conferencing (DVC). Only three respondents asked for training in this area.

When considering delivery, respondents gave high priority to the above two items.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

MSU extension agents are important players in the dissemination of diverse materials to their clients on a technical, educational and organizational level. These individuals not only provide educational programs and information for their clients, but also assist in the implementation of any given program. However, what has been unclear is how these agents identify their sources and the channels used to receive and deliver information. Therefore, this study was designed to identify the sources from which extension agents receive their job-related information and the channels/methods of its delivery to their clients. A systematic stratified random sample of 188 extension agents was drawn and had a response rate of 76 percent. A closed and open-ended questionnaire was designed to measure the frequency of use of information sources and channels. Descriptive and inferential statistics were used to analyze the data.

The statement of a major study conclusion is presented under each research question. A brief discussion is also presented along with recommendations. At the end of this chapter, recommendations for future research are also made.

Conclusions

Research Question 1. What are the selected sources that extension agents use to receive job-related information?

Five major source categories were queried in the questionnaire (1) Print Sources, (2) Electronic Sources, (3) Computer Sources, (4) Organizational Events, and (5) Personal Sources. Of these, the two most preferred sources found were other county agents or MSUE specialists and Extension bulletins/publications, found under the categories of Personal Sources and Print Information Sources. These findings are quite similar to Shih and Evans (1991), who divided information sources into three types: Oral, Written and Electronic. Written-only sources accounted for the largest single share (45.9%), followed closely by a written and oral combination (43%). Less than three percent used electronic information sources. It was expected that the trend of receiving job-related information would have been changed, but results revealed that agents still prefer to receive job-related information through Print and Personal Sources of Information.

Research Question 2. What are the selected channels or methods that extension agents use to deliver information to their clients?

Using the same major source categories as in research question 1, respondents were asked which delivery method they preferred to deliver information to their clients. The two most preferred methods were found to be telephone and Extension meetings, workshops, and courses. These findings were different from those of Burns & Anderson

(1973) and Shi & Evans (1991), who indicated that information provided to clients stems primarily from agriculture journals, extension publications, farming magazines, and extension specialists.

Research Question 3. Is the age of an extension agent related to the use of sources and channels?

There was a low association found between agents' age and use of computer information in receiving job-related information. Although the association was low, it was found that as the age of extension agents increases, use of computer information decreases. In other words, older agents tend to use computer information less than the younger agents.

Research Question 4. Do the years of work experience of an extension agent influence the use of sources and channels to receive and deliver information?

For sources of information, a low association was found between computer information and agents' years of work experience. That is, it was found that as years of work experience increases, use of computer information decreases.

For delivery, it was found that as years of work experience increases, use of print information and electronic information increases. In other words, more experienced agents tend to utilize bulletins and newsletters more than less experienced agents.

Research Question 5. Do male agents differ from female agents in the use of sources and channels?

Gender was found not to be a factor in the use of sources to receive job-related information. However, it was determined that on the delivery side male agents use personal sources such as supply dealers, salespeople, faculty members at other universities, telephone and home visits more to deliver information to their clients than female agents. These findings are quite similar to Radhakrishna and Thomson (1996), who reported that male agents differed from female agents by more frequently communicating with Extension specialists, Extension workers in another state, non-Extension university faculty, and state and federal agencies.

Research Question 6. Does the level of education of an extension agent impact the use of sources and channels?

It would seem that different levels of education would result in differences in sources and channels. However, the results did not show any significant differences. The level of education of extension agents was found not to have an influence in the use of sources and channels. Agents with a bachelors degree or a graduate degree would utilize the same sources of information to receive job-related information and to deliver information.

Research Question 7. Does the primary area of program responsibility of an extension agent impact the use of sources and channels?

The primary area of program responsibility of an extension agent was found to be associated with the use of information sources. Agents working in the area of Agriculture and Natural Resource were found to differ from Children, Youth and Family and

Community Economic Development agents in receiving more information through Print Sources.

Conversely, children, youth and family agents were found to differ from agriculture and natural resource and community economic development agents in receiving more information through electronic sources.

Research Question 8. Does the current position of an extension agent impact the use of sources and channels?

In response to this question, District Agents were found to deliver more information through Personal Sources of Information than County/multicounty Agents and the County Extension Director.

Research Question 9. What type of training program do extension agents require to upgrade their skills in the communication of sources and channels?

Of the 143 respondents, only 42 responses were submitted. These respondents revealed that they were interested in receiving training in World Wide Web, Electronic mail (e-mail) and Desktop Video Conferencing. Agnew (1991) predicted that program delivery approaches would change in the next five years. These changes include increased use of electronic communication and instructional devices. The electronic changes most often mentioned were increased use of telecommunication as a mode of delivery, access to electronic data sources, interactive instructional video, and increased use of computer technology.

Recommendations

Listed below are recommendations that arise from this study.

- With the recent advances in technology, agents should be encouraged to use computer and electronic sources to receive job-related information and to deliver information to their clients.

- Younger agents have shown a higher interest in using computer information sources. Older agents should be encouraged to use this technology, and related computer training should be provided.

- In gender, female agents should be trained and encouraged to deliver more information through personal sources of information.

- In primary area of program responsibility, community economic development agents appear to be trailing their counterparts in use of print information, electronic information, computer information, organizational events, and personal sources of information, both in receiving and delivery of information. Getting them up-to-speed should be a priority.

- In the area of current position, a study needs to be conducted to understand which channel of information source results in greatest use by clients.

- In the area of providing training, respondents indicated that they should be trained in using the World Wide Web, Electronic mail (e-mail) and Desktop Video Conference.

Recommendations for Future Research

1. A replication of this study should be conducted on a national level to determine which sources and channels agents prefer in the United States. This would help to design and implement new programs for extension agents in the use of sources and channels.
2. A follow-up study should be designed and conducted to address how much knowledge agents have in electronic and computer information sources and channels/methods.
3. A follow-up of this study should be conducted within five to ten years to determine if differences between uses of sources and channels by agents in the state of Michigan have changed. There is a strong possibility that agents' attitudes towards using sources and channels will change in years ahead. This follow-up study would help in designing new programs.

APPENDICES

APPENDIX A

ADVANCE E-MAIL NOTIFICATION

Dear MSUE County Extension Director, District Agent, and County/multicounty Agent:

We are conducting the following study, "Michigan Extension Agents' Use of Sources and Channels" to determine the sources from which Extension agents receive their job-related information and the methods of delivery to their clients. A stratified systematic random sample of Extension agents in Michigan has been drawn to identify the participants of the study. You have been selected as a participant. The input we receive will be extremely valuable in evaluating the effectiveness of various sources and channels. With your feedback, we hope to make appropriate recommendations to improve our Extension Service.

Next week you will receive a package consisting of a cover letter, questionnaire, and a pre-addressed, postage paid envelope.

Your participation is crucial to the results of this study, which are very important to current and future Extension agents. We appreciate your involvement and urge you to fill out the questionnaire and return it immediately.

Thank you for your cooperation.

Sincerely,

Murari Suvedi, Ph.D.
Associate Professor

Mehdi Momin-Khowaja
Graduate Student

APPENDIX B

COVER LETTER

Date
Extension Agent Name
Address

Dear (Extension Agent):

We are conducting a study, "Michigan Extension Agents' Use of Sources and Channels" to determine the sources from which Extension agents receive their job-related information and methods of delivery to their clients. A stratified systematic random sample of Extension agents in Michigan has been identified to participate in this study, and you are one of them. The input we receive from you will be extremely valuable in evaluating the effectiveness of various sources and channels. With your feedback, we hope to make appropriate recommendations to improve our Extension Service.

Enclosed you will find a survey; for you to fill out and return in the self addressed stamped envelope, we have provided. Please complete the questionnaire and return by (date). Your participation in this survey is completely voluntary, you may choose to answer all of the questions, to answer some of the questions or not to participate.

Your response will remain completely confidential. The questionnaire has an identification number that will enable us to check your name off the mailing list when the questionnaire is returned. The mailing list will then be discarded. Your name will never be placed on the answer sheet or the questionnaire. To maintain your confidentiality, please do not write your name or return address on the survey. If you have any questions about the confidentiality or voluntary nature of this survey, you may contact Dr. David Wright at Michigan State University's Office of Research and Graduate Studies at (517) 355-2180.

Your participation is crucial for the success of this study. We hope that the results of this study could greatly benefit all Extension professionals. We appreciate your involvement in this study and urge you to fill out the questionnaire and return it immediately.

Thank you for your cooperation.

Sincerely,

Murari Suvedi, Ph.D.
Associate Professor

Mehdi Momin-Khowaja
Graduate Student

APPENDIX C

FOLLOW UP CARD

Dear Survey Participant:

Last week, a questionnaire seeking your opinions about Michigan Extension Agents' Use of Information Sources and Channels was mailed to you.

If you have already completed and returned the questionnaire, please accept our sincere thanks. If not, please do so today. We are especially grateful for your help because we believe your response will be very important to this study.

If you did not receive a questionnaire or if it was misplaced, you will receive another one next week.

Sincerely,

Mehdi Momin-Khowaja
Graduate Student

APPENDIX D

SECOND LETTER

DATE

MSU Extension Agent
Address

Dear (Agent):

About three weeks ago, we wrote you seeking your opinions about sources for job-related information and channels for delivery to your clients. As of today, we have not received your completed questionnaire. We realize you may not have had time to complete it, but we would genuinely appreciate hearing from you.

In the event that your questionnaire has been misplaced, a replacement is enclosed. We request that you complete the questionnaire and return it by (date). Your participation in this survey is completely voluntary, you may choose to answer all of the questions, to answer some of the questions or not to participate. But for information from the study to be truly representative, it is essential that each person in the sample return his/her questionnaire.

Your response will remain completely confidential. Please note that the questionnaire has an identification number that will enable us to check your name off the mailing list when the questionnaire is returned. The mailing list will then be discarded. Your name will never be placed on the answer sheet or the questionnaire. To maintain your confidentiality, please do not write your name or return address on the survey. If you have any questions about the confidentiality or voluntary nature of this survey, you may contact Dr. David Wright at Michigan State University's Office of Research and Graduate Studies at (517) 355-2180.

Your participation is crucial to the results of this study, which are very important to current and future Extension agents. We appreciate your involvement in this study and urge you to fill out the questionnaire and return it immediately.

Thank you for your cooperation.

Sincerely,

Murari Suvedi, Ph.D.
Associate Professor

Mehdi Momin-Khowaja
Graduate Student

APPENDIX E

INSTRUMENT

Michigan Extension Agents' Use of Information Sources and Channels

The purpose of this study is to identify the sources from which Extension agents receive their job-related information and methods of delivery to their clients. Please read all questions thoroughly before you give an answer.

All answers will be kept completely confidential. Please feel free to include comments if you wish.

This survey is being conducted by:
Mehdi Momin-Khowaja
Graduate Student
Department of Agriculture and Natural Resources Education and Communication Systems
409 Agriculture Hall
Michigan State University
East Lansing, MI 48824-1039

Example Question

Please check the circle that shows how much you receive and deliver information from the following source:

	RECEIVE INFORMATION					DELIVER INFORMATION				
	Nothing at all	A little	Some	A fair amount	A great deal	Nothing at all	A little	Some	A fair amount	A great deal
1.The Lansing State Journal	○	○	○	○	✓	○	✓	○	○	○

By checking the circle, the respondent indicated that s/he **RECEIVES** **"a great deal"** of information from the Lansing State Journal and s/he **DELIVERS** **"a little"** information through the Lansing State Journal.

1. We would like to learn how and where you RECEIVE your job-related information and how you DELIVER it to your clients. Please check the circle that shows how much you receive and deliver information from each of the following sources.

	RECEIVE INFORMATION					DELIVER INFORMATION				
A. Print information:	Nothing at all	A little	Some	A fair amount	A great deal	Nothing at all	A little	Some	A fair amount	A great deal
1. General daily/weekly newspaper	O	O	O	O	O	O	O	O	O	O
2. General magazines (such as Successful Farming, Family-Living, Good Housekeeping, etc.)	O	O	O	O	O	O	O	O	O	O
3. Specialized magazines (such as Hoard's Dairyman, Parenting, Youth Today, American Demographic, etc.)	O	O	O	O	O	O	O	O	O	O
4.Extension bulletins/ publications	O	O	O	O	O	O	O	O	O	O
5. Experiment Station publications	O	O	O	O	O	O	O	O	O	O
6. Newsletters from organizations (such as Farm-Bureau, Children's Defense-Fund, etc.)	O	O	O	O	O	O	O	O	O	O
7. Printed materials from commercial firms (such as seed companies, etc.)	O	O	O	O	O	O	O	O	O	O
8. MSUE/AOE Team newsletter	O	O	O	O	O	O	O	O	O	O
9. Books related to your fieldwork	O	O	O	O	O	O	O	O	O	O
10. Press release articles (from MSUE sources)	O	O	O	O	O	O	O	O	O	O
11. Special mailings to organizations (such as farm organizations, youth-serving organizations, human service organizations, etc.)	O	O	O	O	O	O	O	O	O	O
12. Other (specify)_____	O	O	O	O	O	O	O	O	O	O

	RECEIVE INFORMATION					DELIVERY INFORMATION				
B. Electronic information:	Nothing at all	A little	Some	A fair amount	A great deal	Nothing at all	A little	Some	A fair amount	A great deal
1. General TV or radio news	O	O	O	O	O	O	O	O	O	O
2. Specific TV programs (such as farm, family, youth and community programs, etc.)	O	O	O	O	O	O	O	O	O	O
3. Satellite LearnNet or other satellite conferences	O	O	O	O	O	O	O	O	O	O
4. Specific radio programs (such as farm, family, youth and community programs, etc.)	O	O	O	O	O	O	O	O	O	O
5. Extension-produced videotapes	O	O	O	O	O	O	O	O	O	O
6. Other (specify)_____	O	O	O	O	O	O	O	O	O	O
C. Computer information:										
1. Internet/World Wide Web	O	O	O	O	O	O	O	O	O	O
2. DTN/FarmDayta Services	O	O	O	O	O	O	O	O	O	O
3. Electronic mail (E-mail)	O	O	O	O	O	O	O	O	O	O
4. Listservers (such as Crop Observation Reporting Network-CORN, CYF News, Clover Corner News Listserve, etc.)	O	O	O	O	O	O	O	O	O	O
5. Extension-developed software packages	O	O	O	O	O	O	O	O	O	O
6. Commercially produced software packages	O	O	O	O	O	O	O	O	O	O
7. Other (specify)_____	O	O	O	O	O	O	O	O	O	O

	RECEIVE INFORMATION					DELIVERY INFORMATION				
D. Organizational events:	Nothing at all	A little	Some	A fair amount	A great deal	Nothing at all	A little	Some	A fair amount	A great deal
1. Extension meetings, workshops, courses, etc.	O	O	O	O	O	O	O	O	O	O
2. Extension/applied research demonstrations (such as field days, family days, festivals, etc.)	O	O	O	O	O	O	O	O	O	O
3. Private companies' field days, etc.	O	O	O	O	O	O	O	O	O	O
4. Organization/association meetings (such as Farm Bureau, Organic Fare, Day Care Provider, etc.)	O	O	O	O	O	O	O	O	O	O
5. Statewide events (such as ANR Week, Ag Expo, 4-H Exploration Days, CYF-SERIES, etc.)	O	O	O	O	O	O	O	O	O	O
6. Professional society meetings	O	O	O	O	O	O	O	O	O	O
7. AOE training seminars	O	O	O	O	O	O	O	O	O	O
8. Human service collaborative bodies and regional planning and coordinating councils	O	O	O	O	O	O	O	O	O	O
9. Community groups, local schools, clubs, associations, etc.	O	O	O	O	O	O	O	O	O	O
10. State/county fairs	O	O	O	O	O	O	O	O	O	O
11. Other (specify)_____	O	O	O	O	O	O	O	O	O	O

E. Personal sources of information:	RECEIVE INFORMATION					DELIVERY INFORMATION				
	Nothing at all	A little	Some	A fair amount	A great deal	Nothing at all	A little	Some	A fair amount	A great deal
1. Supply dealers, salespeople, etc.	O	O	O	O	O	O	O	O	O	O
2. Other county agents or MSU Extension specialists	O	O	O	O	O	O	O	O	O	O
3. Family, friend or neighbors	O	O	O	O	O	O	O	O	O	O
4. Business consultants	O	O	O	O	O	O	O	O	O	O
5. Your immediate supervisor	O	O	O	O	O	O	O	O	O	O
6. Representatives of local business organizations	O	O	O	O	O	O	O	O	O	O
7. State and federal agencies personnel	O	O	O	O	O	O	O	O	O	O
8. MSU faculty members	O	O	O	O	O	O	O	O	O	O
9. Faculty members at other universities	O	O	O	O	O	O	O	O	O	O
10. Letters/memos	O	O	O	O	O	O	O	O	O	O
11. Fax	O	O	O	O	O	O	O	O	O	O
12. Phone	O	O	O	O	O	O	O	O	O	O
13. Home visits	O	O	O	O	O	O	O	O	O	O
14. Other (specify)_____	O	O	O	O	O	O	O	O	O	O

2. Would you like training on how to receive information and/or deliver information?

1. _____ Yes _____ No

If yes, on which topics you would like to receive information and/or deliver information? Please list:

Receive Information a. _____ b. _____ c. _____

Deliver Information a. _____ b. _____ c. _____

3. Demographics

1. What year were you born? _____
2. Sex: _____ Male _____ Female
3. How long have you been working in Extension? _____ Years
4. Highest level of education:

   _____ Bachelor's degree _____ Master's degree

   _____ Doctoral degree _____ Other (specify) _____
5. Major of highest degree _____
6. What is/are your primary area/s of emphasis? Please check:

   _____ Agriculture and Natural Resources (including Sea Grant)

   _____ Children, Youth and Families (including Nutrition Education)

   _____ Community and Economic Development
7. What is/are your current Extension AOE team/s, if any? _____
8. What is your current position? _____ District agent

   _____ County/multicounty agent

   _____ County Extension director

Thank you very much for taking time to complete and return this survey.
Please remember that all responses are kept confidential.
Is there anything else you'd like to share with us?
Concerns? Suggestions?

_____

_____

_____

_____

_____

Please mail the completed questionnaire in the enclosed return envelope.
Thank you for completing this questionnaire!

Please return the completed questionnaire to:

Mehdi Momin-Khowaja
Graduate Student
Department of ANR Education and Communication Systems
409 Agriculture Hall
Michigan State University
East Lansing, MI 48824-1039

APPENDIX F

TABLES

Appendix Table 1. Relationship between Sources of Information with Age.

Scale	N	Pearson correlation	P-value
Print Information	115	-.009	.925
Electronic Information	123	-.004	.962
Computer Information	122	-.209*	.021
Organizational Events	118	-.069	.458
Personal Sources of Information	121	-.091	.323

Appendix Table 2. Relationship between Channels/Methods of Information with Age.

Scale	N	Pearson correlation	P-value
Print Information	116	.065	.491
Electronic Information	121	.121	.185
Computer Information	119	-.114	.215
Organizational Events	116	-.053	.574
Personal Sources of Information	118	.000	.999

Appendix Table 3. Differences in Sources of Information by Sex.

Scale	Group	N	Mean (sd)	t-value	P-value
Print information	Male	55	2.90 (0.48)	-1.82	.070
	Female	75	2.73 (0.56)		
Electronic information	Male	60	2.17 (0.74)	1.16	.246
	Female	79	2.30 (0.63)		
Computer information	Male	59	2.86 (0.62)	-1.12	.262
	Female	76	2.73 (0.68)		
Organizational events	Male	56	2.74 (0.65)	-.113	.910
	Female	76	2.73 (0.63)		
Personal sources of information	Male	57	2.92 (0.57)	-1.39	.165
	Female	77	2.78 (0.61)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

Appendix Table 4. Differences in Sources of Information by Level of Education.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	Bachelor	59	2.89 (0.56)	1.68	0.189
	Master	61	2.72 (0.52)		
	PhD	6	2.71 (0.13)		
Electronic information	Bachelor	62	2.35 (0.70)	2.53	0.083
	Master	66	2.17 (0.64)		
	PhD	7	1.82 (0.54)		
Computer information	Bachelor	58	2.71 (0.70)	0.812	0.446
	Master	66	2.83 (0.54)		
	PhD	7	2.97 (0.99)		
Organizational events	Bachelor	60	2.81 (0.68)	0.728	0.485
	Master	62	2.67 (0.60)		
	PhD	7	2.75 (0.55)		
Personal sources of information	Bachelor	61	2.87 (0.61)	0.195	0.823
	Master	64	2.81 (0.57)		
	PhD	7	2.91 (0.77)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

Appendix Table 5. Differences in Channels/Methods of Information by Level of Education.

Scale	Group	N	Mean (sd)	F-ratio	F-Prob
Print information	Bachelor	57	2.31 (0.61)	.017	0.984
	Master	62	2.30 (0.55)		
	PhD	7	2.33 (0.69)		
Electronic information	Bachelor	59	2.07 (0.63)	1.058	0.350
	Master	66	1.91 (0.55)		
	PhD	7	1.94 (0.78)		
Computer information	Bachelor	57	2.23 (0.71)	1.338	0.266
	Master	65	2.31 (0.71)		
	PhD	7	2.71 (1.16)		
Organizational events	Bachelor	57	2.60 (0.64)	0.210	0.811
	Master	61	2.59 (0.58)		
	PhD	7	2.75 (0.81)		
Personal sources of information	Bachelor	58	2.66 (0.55)	2.161	0.119
	Master	63	2.73 (0.62)		
	PhD	7	3.18 (1.05)		

The mean can range from 1 (nothing at all) to 5 (a great deal)

Appendix Table 6. Top Five Print Sources to Receive Job-related Information

Sources	Ranking	Mean (St.Dev)
Extension bulletins/publications	1	3.95 (.96)
Books related to your fieldwork	2	3.40 (1.03)
Press release articles (from MSUE sources)	3	2.91 (1.10)
Specialized magazines (such as Hoard's Dairyman, Parenting, Youth Today, American Demographic, etc.)	4	2.89 (1.11)
MSUE/AOE Team newsletter	5	2.88 (1.28)
Newsletters from organizations (such as Farm- Bureau, Children's Defense- Fund, etc.)	5	2.88 (.89)

Appendix Table 7. Top Five Print Channels/Methods to Deliver Information

Channels/Methods	Ranking	Mean (St.Dev)
Extension bulletins/publications	1	3.68 (1.22)
General daily/weekly newspaper	2	2.99 (1.11)
Press release articles (from MSUE sources)	3	2.81 (1.24)
Special mailings to organizations (such as farm organizations, youth-serving organizations, human service organizations, etc.)	4	2.74 (1.17)
MSUE/AOE Team newsletter	5	2.35 (1.31)

Appendix Table 8. Top Five Electronic Information Sources to Receive Job-related Information

Sources	Ranking	Mean (St.Dev)
Extension-produced videotapes	1	2.61 (.94)
Satellite LearnNet or other satellite conferences	2	2.42 (.97)
General TV or radio news	3	2.39 (.99)
Specific TV programs (such as farm, family, youth and community programs, etc.)	4	2.05 (1.27)
Specific radio programs (such as farm, family, youth and community programs, etc.)	5	1.80 (.90)

Appendix Table 9. Top Five Electronic Channels/Methods to Deliver Information

Channels/Methods	Ranking	Mean (St.Dev)
Extension-produced videotapes	1	2.50 (1.11)
General TV or radio news	2	2.12 (.93)
Satellite LearnNet or other satellite conferences	3	1.99 (1.10)
Specific radio programs (such as farm, family, youth and community programs, etc.)	4	1.82 (.99)
Specific TV programs (such as farm, family, youth and community programs, etc.)	5	1.57 (.81)

Appendix Table 10. Top Five Computer Information Sources to Receive Job-related Information

Sources	Ranking	Mean (St.Dev)
Electronic mail (E-mail)	1	4.02 (1.00)
Internet/World Wide Web	2	3.65 (1.04)
Listservers (such as Crop Observation Reporting Network-CORN, CYF News, Clover Corner News Listserve, etc.)	3	3.06 (1.25)
Extension-developed software packages	4	2.43 (1.17)
Commercially produced software packages	5	2.27 (1.17)

Appendix Table 11. Top Five Computer Channels/Methods to Deliver Information

Channels/Methods	Ranking	Mean (St.Dev)
Electronic mail (E-mail)	1	3.41 (1.20)
Internet/World Wide Web	2	2.84 (1.28)
Listservers (such as Crop Observation Reporting Network-CORN, CYF News, Clover Corner News Listserve, etc.)	3	2.33 (1.23)
Extension-developed software packages	4	2.03 (1.17)
Commercially produced software packages	5	1.85 (1.09)

Appendix Table 12. Top Five Organizational Events to Receive Job-related Information

Sources	Ranking	Mean (St.Dev)
Extension meetings, workshops, courses, etc.	1	3.87 (.94)
AOE training seminars	2	3.20 (1.35)
Statewide events (such as ANR Week, Ag Expo, 4-H Exploration Days, CYF-SERIES, etc.)	3	3.13 (1.16)
Extension/applied research demonstrations (such as field days, family days, festivals, etc.)	4	2.98 (1.23)
Human service collaborative bodies and regional planning and coordinating councils	5	2.77 (1.26)
Professional society meetings	5	2.77 (1.28)

Appendix Table 13. Top Five Organizational Events to Deliver Information

Channels/Methods	Ranking	Mean (St.Dev)
Extension meetings, workshops, courses, etc.	1	3.77 (1.10)
Extension/applied research demonstrations (such as field days, family days, festivals, etc.)	2	3.09 (1.31)
Community groups, local schools, clubs, associations, etc.	3	3.04 (1.06)
Statewide events (such as ANR Week, Ag Expo, 4-H Exploration Days, CYF-SERIES, etc.)	4	2.76 (1.19)
Human service collaborative bodies and regional planning and coordinating councils	5	2.58 (1.25)

Appendix Table 14. Top Five Personal Sources of Information to Receive Job-related Information

Sources	Ranking	Mean (St.Dev)
Other county agents or MSU Extension specialists	1	4.01 (.85)
Phone	2	3.83 (1.14)
MSU faculty members	3	3.23 (1.13)
Fax	4	3.02 (1.06)
Letters/memos	5	3.01 (1.02)

Appendix Table 15. Top Five Personal Channels/Methods to Deliver Information

Channels/Methods	Ranking	Mean (St.Dev)
Phone	1	3.95 (1.06)
Other county agents or MSU Extension specialists	2	3.51 (1.11)
Letters/memos	3	3.11 (1.08)
Fax	4	3.03 (1.08)
Home visits	5	2.87 (1.35)

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