CHARACTERISTICS AND BARRIERS IMPACTING THE DIFFUSION OF E-EXTENSION AMONG TEXAS COOPERATIVE EXTENSION COUNTY EXTENSION AGENTS

A Dissertation

by

AMY MARIE HARDER

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2007

Major Subject: Agricultural Education

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Approved by:

Chair of Committee,	James R. Lindner
Committee Members,	Larry M. Dooley
	Tim H. Murphy
	Nicole L. P. Stedman
	Gary J. Wingenbach
Head of Department,	Christine Townsend

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ABSTRACT

Characteristics and Barriers

Impacting the Diffusion of E-Extension among

Texas Cooperative Extension County Extension Agents. (August 2007)

Amy Marie Harder, B.S., Colorado State University;

M.Agr., Colorado State University

Chair of Advisory Committee: Dr. James R. Lindner

The overall purpose of this study was to understand the influence of selected factors on the adoption of eXtension by Texas Cooperative Extension County Extension agents. Specifically, the study looked at how the relationships between stage in the innovation-decision process, characteristics of agents, characteristics of the innovation, and barriers to adoption affect the diffusion of eXtension. A random sample of 237 agents was selected for participation in the study. A majority of agents reported they were in the knowledge stage (52%); 31% had no knowledge of the innovation; 8% were in the implementation stage; 3% were in the persuasion stage; 3% were in the decision stage and 2% were in the confirmation stage.

Respondents had positive perceptions of relative advantage, compatibility, complexity and trialability as those characteristics related to eXtension. They had the most positive perceptions of complexity. They did not perceive eXtension to have a high degree of observability.

Agents perceived at least five barriers existed to the adoption of eXtension. Reducing or eliminating these barriers, particularly the barrier related to concerns about time, would be expected to positively affect the rate of adoption.

Agents' perceptions of complexity and compatibility significantly differed by primary agent role and gender, respectively. The differences may be attributable to varying job experiences based upon role and gender.

Agents' perceptions of a lack of eXtension incentives significantly differed by education. Significant relationships existed between selected characteristics of eXtension and potential barriers to the adoption of eXtension. Based on the findings, offering monetary incentives may increase the rate of adoption, and decrease agents' financial concerns.

Significantly more respondents reported they were in the "no knowledge" stage in the innovation-decision than would be expected to occur by chance.

Agents may have ignored repeated messages about eXtension because it was not perceived as consistent with their attitudes and beliefs. This implication should be noted by those hoping to increase the diffusion of eXtension.

On a broader level, these findings support expanding the model of the innovation-decision process to include the "no knowledge" stage.

For my grandma, Dolores Gray.

I love you, I miss you, and I hope to make you proud of all that I do.

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My love and my gratitude go to my parents, Patrick and Linda Gray, for laying the foundation for success in my life. They taught me to have good values and faith in God. They took my sister and me out into the world to explore new places, try new things, and make memories which would eventually shape the type of adults we would become. Most of all, they have always believed I could accomplish whatever I set my mind to, and they never let me settle for anything less than achieving my potential.

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in the midst of insanity. To the rest of my friends, I will never forget: the time we spent commiserating together on Wednesday nights; Sunday football feasts; our first AGSS softball victory against the faculty team; and sacrificing body parts for soccer. Go Smart ALECs!

Some graduate students have children they want to thank. I have dogs. Bubba and Tonka have been my faithful companions throughout the entire writing process, often lying by my feet as I worked on my dissertation for hours at a time. If it weren't for going on walks with them, there are days I don't think I would have ever made it outside. I will do everything I can to repay them with much love, hugs, and the biggest rawhides money can buy.

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CHAPTER I

INTRODUCTION

Bringing knowledge from the university to the people—this is the mission of Cooperative Extension. Since its inception in 1914, Extension has focused on educating the American public through outreach programs. In a single year, one Extension program – 4-H - served almost seven million people (USDA, 2003). Yet, there is concern that the traditional model which made Extension so successful in the 20th century may not sustain Extension in the 21st century (Bull, Cote, Warner & McKinnie, 2004; Crosby et al., 2002; Rasmussen, 1989; Williamson & Smoak, 2005). A review of the history of Cooperative Extension, the current extension system, statement of problem, research objectives, and the significance of the study are presented in this chapter.

History of Cooperative Extension

Cooperative Extension is the result of a need for a service which could disseminate information about the best agricultural and mechanical practices to the farmers and ranchers. The first legislation to address this need was the Morrill Land-Grant College Act of 1862. As the name suggests, the Morrill Act established the first land-grant colleges in the country for the purposes of teaching agriculture and

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This dissertation follows the style of the *Journal of Agricultural Education*.

mechanics. In 1887, the Hatch Act created agricultural experiment stations in each state to test new farming and ranching practices. Three years later, a second Morrill Act was passed. It mandated annual appropriations to each land-grant institution and led to the creation of the first land-grant colleges for African-Americans.

After these Acts were passed, momentum towards to the creation of Cooperative Extension began to build. Agriculturalists established farmers' institutes across the country, trains filled with lecturers and educational displays traversed the fields, and boys' and girls' clubs teaching practical skills such as growing corn and canning were quickly gaining in popularity. The concepts of the county agent and extension had been introduced in many areas with positive results. Out of these events emerged the most significant piece of legislation for Cooperative Extension, the Smith-Lever Act (Rasmussen, 1989).

In 1914, the Smith-Lever Act was passed to create the Cooperative Extension Service. Extension became a part of the land-grant university framework, joining the land-grant institutions and agricultural experiment stations. The extension agent's role was to serve as a translator, interpreting land-grant research for the local clientele who needed it.

Current Extension System

Today's Extension service has a strong resemblance to its historical roots (Rasmussen, 1989). The unique tri-level administrative system remains a defining feature of Extension. Agents still provide the link between the land-grant universities

and the local clientele. Most notably, Extension continues to maintain an extensive network of contacts throughout nearly every county and parish in the United States, with over 3,100 offices in total.

Extension's programming has evolved since its inauguration (Rasmussen, 1989; Seevers, Graham, Gamon & Conklin, 1997). Extension agents are no longer limited to traditional subjects such as agriculture, 4-H, and home economics (modernly referred to as family and consumer sciences), but they have diversified into other areas, like nutrition education, natural resources and horticulture. In the traditional areas, such as agriculture, programming has expanded to include contemporary issues such as contagious livestock diseases (Ather & Green, 2005). Other agents have been recruited to participate in preparedness trainings for such potential disasters as bio-terrorism, wildfire and hurricanes (Wiens, Evans, Tsao, & Liss, 2004).

The ability to communicate with people has traditionally been considered the hallmark of Extension (Simeral, 2001). County personnel develop personal relationships with the clientele they serve, working with advisory councils, local commissioners and families on an everyday basis. Agents devote significant amounts of time to their work. This traditional method of doing business adds a recognizable value to Extension and its programs (Simeral, 2001).

According to Accenture's (2003) business assessment of Cooperative Extension, "cultural and technological changes are quickly outpacing the traditional Extension delivery model" (p. 5). Extension cannot afford to be outpaced as it moves forward into the 21st century. As is, Smith-Lever funding has remained flat over the last decade. This

has caused 80% of extension programs to reduce personnel, while 60% have responded by cutting programs, thus creating unmet needs in many communities (Payne, 2004). A Cooperative State Research, Education, and Extension Service (CSREES) white paper noted, "The capacity of the Extension System to change is swiftly eroding through decreasing human resources and decreasing financial capital" (Crosby et al., 2002, Problem/Need section, ¶ 2).

State-level funding has also decreased. Even states without funding cuts are in precarious budgetary positions (McDowell, 2005). Increasingly, state Extension programs are turning to grants and private source funding for their budgetary needs. Partners who used to work together have been placed in direct competition with each other, threatening the collaborative nature of the system (Payne, 2004). This unstable financial situation highlights the need for Extension to move beyond the status quo and embrace innovative methods of educational outreach.

Doing business via the Internet is both realistic and potentially essential for success in the 21st century. As of April 2006, 73% of American households with telephone access reported (at least) occasional use of the Internet (Madden, 2006). This number is expected to continue growing into the foreseeable future. By taking advantage of this trend and using the Internet as an educational tool, increases in the overall functionality of the entire Cooperative Extension system can be recognized (Tennessen, PonTell, Romine & Motheral, 1997).

A major flaw of Extension's current Internet efforts is their lack of visibility (Accenture, 2003; Palmer, 2006). This is a recurring problem for the organization. Jenkins (1993) said of Extension:

> The problem isn't they have an unfavorable image; they don't. The problem is they have no image at all (or only a very weak and fuzzy one) with certain vitally important groups that will have a significant impact on their future (¶ 1).

Weerts (2005) echoed this sentiment: "The need for public understanding and awareness of the value of university Extension and outreach is at an all-time high" (¶ 1). As an organization dependent upon public dollars, the lack of Extension's organizational and Internet visibility is a serious concern.

A new delivery strategy, known as eXtension, is currently being developed to provide Extension with a critically needed information technology solution. The vision for eXtension was initially developed by an Extension Committee on Organization and Policy (ECOP) task force in 2001. In 2002, an ECOP report entitled *The Extension System: A Vision for the 21st Century* called for Extension personnel to move aggressively into the world of information technology. Since that time, CSREES and many of the 1862 and 1890 land-grant institutions have joined together to provide the bulk of eXtension's four million dollar annual budget. eXtension is administrated by a single director and a small staff, with oversight from ECOP, a governing committee and multiple advisory councils.

The nationwide, online network of eXtension will be available as a website 24 hours a day, seven days a week, in a wide variety of formats. Agents and clientele will be able to access eXtension from any internet-ready device and can personalize the program to reflect their needs. Proposed features include frequently asked questions, forums, online courses, certification programs, live chats and diagnostics. Content will be provided by teams of Extension experts, called Communities of Practice, from around the country. Anticipated benefits include increased economic efficiency of the current Extension model by reducing duplication of efforts, increased profits, increased visibility, increased immediacy of information and increased customer satisfaction (Accenture, 2003). In short, eXtension could be the key to increasing the relevance of Extension for future generations of clientele, while the failure to adopt some form of e-learning could be a dangerous proposition (Williamson & Smoak, 2005).

Statement of Problem

Agent adoption is critical to the success of eXtension (Accenture, 2003). However, the difficulty in institutionalizing organizational change at the agent level is no secret (Washington & Fowler, 2005). It is unlikely that eXtension will differ in this regard. Actively participating in eXtension will require agents to incorporate new delivery strategies into their own work. eXtension also affects the level of independence most agents are accustomed to by focusing on nationally developed, rather than locally developed, educational resources. As such, agents may fail to adopt eXtension based upon their perceptions of it.

There are a myriad of consequences for Cooperative Extension if eXtension fails and no other alternatives are pursued. Extension would be no closer to meeting the needs of an increasingly online audience. Its organizational visibility and Internet presence would remain low. Cooperative Extension would need to think of an alternate solution to raise funds to offset flat Smith-Lever funding. Extension would need to recoup the millions of dollars that have already been invested in eXtension. The failure of eXtension might even cause state-based Extension programs to withdraw from any future national efforts. If Cooperative Extension could not overcome these obstacles, then Extension's ability to serve as a relevant educational outreach program would be in jeopardy.

Purpose of Study

The purpose of this study is to understand the influence of selected factors on the adoption of eXtension by Texas Cooperative Extension county extension agents.

Research Objectives

1. Describe selected personal characteristics of Texas Cooperative Extension county extension agents.
2. Determine agents' stage in the innovation-decision process, based upon Li's (2004) adaptation of Rogers' (2003) stages in the innovation-decision process (no knowledge, knowledge, persuasion, decision, implementation, and confirmation).

3. Determine agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation (relative advantage, compatibility, observability, complexity, and trialability).
4. Determine agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension.
5. Determine if differences exist between agents' perceptions of eXtension based upon selected personal characteristics.
6. Determine if differences exist between agents' perceptions of potential barriers to the adoption of eXtension based upon selected personal characteristics.
7. Describe relationships between agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation and their perceptions of potential barriers to the adoption of eXtension.
8. Determine the appropriateness of including "no knowledge" as a stage in the innovation-decision process.
9. Predict stage in the innovation-decision process based upon agents' perceptions of the characteristics of eXtension, perceptions of the barriers to the diffusion of eXtension, and selected personal characteristics.

Theoretical Framework

The theoretical framework for this research is based upon Rogers' (2003) theory of the diffusion of innovations. Rogers' theory states innovations diffuse through a social

system over time. The rate of diffusion for an innovation is related to how potential adopters perceive the innovation, and the characteristics of potential adopters.

There are five characteristics which influence how rapidly an innovation is diffused into a social system: relative advantage, compatibility, complexity, observability and trialability (Rogers, 2003). Of these five, relative advantage and compatibility are considered to have the most influence on the rate of adoption (Rogers, 2003). Innovations that are perceived by individuals to have low complexity, with high relative advantage, compatibility, observability, and trialability, diffuse most rapidly. Certain factors, often called barriers, can negatively affect any of the perceived characteristics of an innovation and the speed with which it is diffused.

Adopters can be categorized into five categories based upon how quickly they implement an innovation: innovator, early adopter, early majority, late majority and laggard (Rogers, 2003). Innovators are the first individuals to move through the innovation-decision process; laggards are the last. The categorization of an individual as a specific type of adopter is influenced by the speed with which the individual moves through the innovation-decision process. Rogers (2003) included five stages in the innovation-decision process: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. Li (2004) proposed a sixth stage (no knowledge) to include individuals who had not yet heard of an innovation.

Attributes such as international experience, high social status, solid finances, and high levels of education are associated with innovators and early adopters. The slower rates of adoption exhibited by the late majority and laggards are typically linked with

less education, less involvement in formal organizations, and less exposure to mass media. Understanding the characteristics of adopters can help to explain the diffusion of an innovation more clearly (Rogers, 2003).

Significance of Study

The findings of this study may have practical and academic implications. It is the first known study to examine agents' perceptions of eXtension, potential barriers to eXtension, stage in the innovation-decision process, and adopter characteristics. This study may provide empirical evidence that eXtension administration, individual land-grant institutions, and local agents can use to make decisions about the adoption and diffusion of eXtension. Extension agents will be provided with the opportunity to voice their opinions and possible concerns about eXtension in a constructive manner. Through the process of participating in this study, agents' awareness of eXtension may be increased. Finally, this study may contribute to the knowledge base for the diffusion of innovations theory.

Definition of Terms

Compatibility: "the degree to which an innovation is perceived as better than the idea it supersedes" (Rogers, 2003, p. 15)

Complexity: "the degree to which an innovation is perceived as difficult to understand and use" (Rogers, 2003, p. 16)

CSREES: Cooperative State Research, Extension, and Education Service

ECOP: Extension Committee on Organization and Policy

Extension Agents: individuals employed to serve the citizens of a county, district or parish in an Extension role; also known as educators in some areas

eXtension: a nationwide online network of research-based information resources available to the public and supported by CSREES and partnering land-grant institutions (Accenture, 2003)

Innovation: "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12)

Observability: "the degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 16)

Relative advantage: "the degree to which an innovation is perceived as better than the idea is supersedes" (Rogers, 2003, p. 15)

Trialability: "the degree to which an innovation may be experimented with on a limited basis" (Rogers, 2003, p. 16)

Limitations of Study

This study focuses on an emerging innovation; therefore, it is possible the participants are still developing their perceptions of the characteristics and barriers of eXtension. However, the data will provide an important baseline for measuring the long-term diffusion of eXtension. In addition, the target population is limited to Texas Cooperative Extension county extension agents so the results may not be generalizable to extension agents in other states.

CHAPTER II

REVIEW OF LITERATURE

This research focused on eXtension, which is an emerging innovation. No published studies about eXtension were found during the review of the literature. Studies of the diffusion of web-based education in higher education and studies of the diffusion of technologies related to eXtension amongst Extension agents were reviewed for findings germane to the adoption and diffusion of eXtension. The literature is presented in three primary areas: (a) characteristics of innovations, (b) barriers to innovations, and (c) characteristics of adopters.

The idea of diffusion was first broadly introduced to the Extension profession in 1963 by Everett M. Rogers. Rogers (1963) wrote a two article series appearing in the inaugural and second issues of the *Journal of Cooperative Extension* (now known as the *Journal of Extension*), detailing the appropriateness of the diffusion theory for Extension workers and providing an overview of the relevant literature.

In his first article, Rogers (1963) stated: "All Extension workers are change agents—professional persons who attempt to influence adoption decisions in a direction they feel is desirable" (p. 17). He identified four areas of diffusion as significant to Extension: (a) the adoption process, (b) the rate of adoption of innovations, (c) adopter categories, and (d) opinion leadership (Rogers). This study focused on the rate of adoption of innovations and adopter categories in an effort to understand the factors affecting the diffusion of eXtension.

Characteristics of an Innovation

According to Rogers (1963): “New ideas and potential adopters have identifiable characteristics which appear to affect the diffusion of innovations” (p. 69). Rogers (2003) defined an innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (p. 12). Innovations are not adopted immediately or uniformly by individuals. Instead, each innovation has its own rate of adoption, which is “the relative speed with which an innovation is adopted by members of a social system” (Rogers, 2003, p. 221). The rate of adoption can be affected by a number of different factors, but the greatest amount of variance can be attributed to five attributes (Rogers, 1995). These are relative advantage, compatibility, complexity, observability, and trialability.

Relative advantage is “the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers, 2003, p. 15). An innovation may be perceived as advantageous for a number of reasons. For example, fuel efficient cars sell better than large trucks when gas prices are high, because of the perceived cost savings. However, economic profitability is only one of the subdimensions of relative advantage that Rogers identified. Immediacy of reward, social prestige, low initial cost, a decrease in discomfort and a saving of time and effort are other subdimensions positively affecting the relative advantage of an innovation. When adopters perceive an innovation to have a high degree of relative advantage, it is much more likely the innovation will have a rapid rate of adoption.

Compatibility is "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003, p. 240). Some innovations, despite clear benefits for adopters, fail to diffuse due to clashes with cultural norms. Other innovations are misused, because individuals confuse the new idea with an old one. Finally, an innovation which appears to fulfill a need for an individual will be more attractive than one that does not. As with relative advantage, a high degree of perceived compatibility is associated with a more rapid rate of adoption.

Trialability is "the degree to which an innovation may be experimented with on a limited basis" (Rogers, 2003, p. 16). Previously, Rogers referred to this as divisibility (Rogers, 1963), but both terms address the concept of allowing a potential adopter to "test-drive" an innovation. In fact, test drives are a classic example of car dealers attempting to increase the trialability of their product, to help convince individuals to buy. Some innovations are more inherently divisible, and therefore more trialable, than others. These innovations will likely diffuse faster than those that are non-divisible. Rogers suggested trialability is valued more highly by the first individuals considering adoption than those who adopt later, because they do not have the benefit of observing other adopters. The experiences of near peers can substitute for personal experience if necessary.

Observability is another key characteristic associated with the rate of adoption of an innovation. Observability is "the degree to which the results of an innovation are visible to others" (Rogers, 2003, p. 16). As mentioned previously, individuals' decisions to adopt are influenced by their observations of others who have adopted an innovation.

Individuals are more likely to adopt an innovation when they can see other people have adopted it first. Observability is positively associated with rate of adoption.

Of the five characteristics of an innovation, complexity is the only one negatively associated with rate of adoption. Complexity is "the degree to which an innovation is perceived as difficult to understand and use" (Rogers, 2003, p. 16). Individuals may be discouraged from adopting innovations which are perceived to be too complex. Perceptions of complexity can lead an individual to believe the costs of adoption will exceed the anticipated benefits.

There is an abundance of literature regarding the relative advantage of web-based distance education for students. However, there has been less focus on the perceived benefits to faculty. Murphy and Terry (1998) sought to achieve consensus in the field of agricultural education regarding the usage of electronic technologies. Specifically, the researchers asked the panel of experts on the Delphi panel to identify the positive effects and obstacles related to the adoption of electronic technologies in agricultural education (Murphy & Terry). The panel identified 21 ways in which technology would improve instruction. The statements were clustered by the researchers to form four broad areas, three of which were beneficial to faculty. Electronic technologies were perceived to improve informational resources for faculty and to increase the effectiveness of instructional materials. Increased convenience for delivering information via electronic technologies was the third benefit. Murphy and Terry concluded electronic technologies would lead to improvements in how agricultural education is taught.

Convenience was also a recurring theme associated with the use of online instruction for faculty at Mississippi State University (Gamill & Newman, 2005). Factors perceived to increase convenience included the reduction of time spent grading and disseminating information, ability to be constantly in contact with students, flexibility, and control of time. Respondents also mentioned potential cost savings to their department, resulting from a decreased dependence on paper and copiers. Despite these findings, faculty remained hesitant about adopting online instruction. A comment from one faculty member described the challenge of promoting the relative advantages of online instruction: 'It is not clear to the faculty that Web-based courses are really better…Keeping up with new trends is not always a good thing unless it is very clear that the trend is in a beneficial direction' (Gamill & Newman, 2005, p. 67).

Incentives must sometimes be offered before people are willing to try an innovation. This can be true even when the evidence suggests the innovation is better than the idea that preceded it. Rogers stated: "adopter incentives increase relative advantage" (2003, p. 238). Rockwell, Schauer, Fritz and Marx (1999) examined the incentives which positively influence faculty and administrators to develop distance education courses. Faculty at a Midwestern land-grant university identified and ranked factors perceived to be incentives for teaching distance education courses. Intrinsic rewards, such as self-gratification, recognition of work, peer recognition, and a personal desire to teach were ranked the highest. Intrinsic rewards may be the reason some faculty choose to teach distance courses. Porter (2004) found the extra time necessary to learn the technology and develop online materials was not rewarded in salary or with

incentives. Interestingly, monetary awards were not found to be a significant incentive in the Rockwell, et al. study.

According to Rogers (2003), innovations may be compatible with prior experiences or ideas. Technology is increasingly a part of an extension agent's daily activities (Gregg & Irani, 2004). A brief review of the *Journal of Extension* uncovered numerous examples of technology utilized by agents (Carroll & Lovejoy, 2005; Gustafson & Crane, 2005; Hoffman Tepper & Roebuck, 2006; Kallioranta, Vlosky & Leavengood, 2006; Massey, Jaskolski & Sweets, 2005). Previous experience with technology should increase the compatibility of eXtension.

Seevers (1999) investigated the beliefs and organizational values of New Mexico Cooperative Extension Service employees. Employees were asked to rate 53 value statements according to their personal beliefs, as well as how evident they believed that value to be in the organization. Of the original 53 value statements, only 14 were "extremely valued," as ranked by at least 75% of the respondents. A number of these values may have a direct effect on the compatibility of eXtension with organizational Extension values, such as:

- Honesty/integrity in our work
- Credibility with clientele
- Helping people to help themselves
- High standards of excellence in educational values
- Useful/practical programs
- Teamwork among co-workers

- Quick response to clientele concerns/requests
- Flexibility/adaptability in programming
- Recognition that our employees are our organization's greatest resource

This list of values is highly compatible with the goals of eXtension. However, Seevers (1999) found inconsistencies between what was valued and what was evident. Some of the most valued statements were ranked as least evident, including "teamwork among co-workers," "high standards of excellence in education programming," and "quick response to clientele concerns/requests" (Seevers, 1999, p. 427). These are the type of values eXtension is designed to address. The launch of eXtension is consistent with Seevers' recommendation that action be taken to increase the evidence of important organizational values. However, eXtension may decrease the degree to which employees perceived themselves to be valued resources. This could limit the overall compatibility of eXtension with employees' values.

Safrit, Conklin, and Jones (2003) examined the organizational values of Extension educators in Ohio, using a longitudinal design to compare the recognized values of 1991 and 2001. Of the original twelve values identified in 1991, ten remained organizational values in 2001. The top four values in 2001 were: (a) "honesty/integrity in our work," (b) "credibility with clientele," (c) "useful/practical programs," and (d) "an emphasis on excellence in educational programming" (Safrit, et al., 2003, p. 3).

Despite a significant investment of time and money, efforts to increase the organizational values of "racial/ethnic diversity among employees," "racial/ethnic diversity among clientele," and "OSU Extension as a leader in overall outreach and

engagement at OSU" were largely unsuccessful, resulting in little to no gain (Safrit, et al., 2003, p. 2). Possible explanations offered by Safrit, et al. addressed the feasibility of shifting an organization's values over a decade, possible alienation of personnel as a result of advocating values not shared by most employees, and the difficulty in changing culture. The latter may have important implications for eXtension. Although enormous amounts of time and effort are being placed into promoting the value of eXtension, Extension agents might not view eXtension as compatible with the organizational culture.

A follow-up to the Safrit, et al. (2003) study was conducted to determine how evident important organizational values were perceived to be (Crossgrove, Scheer, Conklin, Jones, & Safrit, 2005). Significant gaps between the importance and evidence of values were identified. While "honesty/integrity in our work" and "credibility with clientele" were considered highly valued within the organization, the "unbiased delivery of information" and "research-based programs" were most evident (p. 5). Crossgrove, et al. concluded a disparity existed between belief and practice. The conclusion was supported by similar findings in previous studies in Kansas and New Mexico (Lavergne & Rutherford, 2002; Seevers, 2000).

Rogers' (2003) also stated compatibility could be established if an innovation met the needs of potential adopters. Although eXtension is primarily geared towards clientele needs, it is also expected to be a resource for agents (Accenture, 2003). There is reason to believe some extension agents are receptive to the idea of online professional development. A survey of human and family extension educators revealed a majority of

the respondents were interested in participating in online professional development; almost 25% were already doing so (Senyurekli, Dworkin, & Dickinson, 2006). Further, educators indicated they needed professional development opportunities that were convenient and did not exceed their desired time commitment. eXtension has the potential to fulfill these needs, thereby enhancing the possibility extension agents will see the innovation as compatible.

Murphy and Dooley (2001) found agricultural education faculty considered the use of distance technologies "useful" and "important" for improving teaching (p. 154). Faculty members believed distance technologies were rapidly going to change how and what was taught. However, a related study by Murphy and Dooley (2001) determined some faculty members who claimed to have positive beliefs about distance education failed to adopt during the five year span of their longitudinal study. Other faculty members continued to be philosophically opposed to the use of distance technologies. These findings might have been a sign of cultural resistance to the idea of incorporating technologies into agricultural education, or the lack of a perceived need to improve the current system.

A study of a larger population of agricultural educators found a contrasting view. According to Teig and Miller's (2006) survey of faculty and staff, distance education was accepted into the professional culture, although concerns were acknowledged regarding its compatibility with the vision and mission of agricultural education and a perceived lack of support from administrators. In addition, faculty and staff did not universally endorse distance education. The researchers highlighted this as an important

point, stating “if a lack of consensus exists, then adoption may be slowed to the point where it is stagnated, thereby never becoming a reality of the culture” (p. 249). Despite these issues, Teig and Miller reiterated their conclusion that distance education was compatible with the values of agricultural education and the greater land-grant mission. As Cooperative Extension shares the same land-grant mission, this study is particularly applicable to understanding the potential adoption of eXtension.

Although the literature is informative in regards to the relative advantage and compatibility of eXtension and distance education, it is strikingly less so for observability and trialability. It is possible research has not focused on these topics, due to the greater role relative advantage and compatibility play in the adoption-decision process, versus observability or trialability (Rogers, 2003). A clear gap exists in the literature regarding these two characteristics.

As mentioned earlier, the more complex the innovation, the less likely it is to be adopted. Previous studies have suggested extension agents need professional development and in-service opportunities to strengthen their computer skills (Albright, 2000; Courson, 1999). However, agents perceived themselves to be competent in the use of the Internet to find information (Courson, 1999). A lack of computer skills could increase the perceived complexity of eXtension, but Extension agents may feel very comfortable accessing eXtension as an information resource. Due to this conflict, it remains unclear how agents will perceive the complexity of eXtension.

Barriers to Adoption

A review of the literature finds a substantial amount of research regarding barriers which may prevent faculty in higher education from adopting distance education (e.g., Curbelo-Ruiz, 2002; Kuck, 2006; Porter, 2004). Maguire's (2005) synthesis of the literature found a number of recurring barriers identified in multiple studies, such as faculty time and compensation, technical expertise, concerns about workload, and lack of funding. In order to derive clearer meaning from the many barriers found to be issues for faculty, Maguire proposed dividing barriers into three categories: intrinsic, extrinsic, and institutional. Extrinsic barriers were associated with the institution. Intrinsic inhibitors included resistance to change and intimidation of technology (Berge, 1998; Parisot, 1997, in Maguire, 2005). Institutional inhibitors were subdivided into factors concerning administrative and technical support, and factors addressing technology and teaching concerns. It is important to understand these differentiations because eXtension's diffusion rate may also be impeded by instrinsic, extrinsic, and institutional barriers. Participant adoption increases when barriers and inhibitors are eliminated (Schifter, 2000).

Time has been one of the most significant concerns for faculty since distance education began to gain momentum in the nineties. Murphy & Terry's study (1998) was one of the first to report time was perceived by faculty to be a barrier to the diffusion of distance education in agricultural education. Similar research in the following years yielded more evidence of time as a barrier, both in agricultural education and other higher education fields (Berg, Muilenburg, Van Haneghan, 2002; Haber, 2006; Roberts

& Dyer, 2005). Nelson and Thompson (2005) reported faculty and program leaders of agricultural education programs perceived there was a lack of administratively provided time to develop distance education materials. The amount of time necessary to learn how to use the technology was also perceived to be a problem (Curbelo-Ruiz, 2002), as was the amount of time necessary to develop distance education materials (Daugherty & Funke, 1998). Spector (2005) found experienced online teachers spent substantially more time on their courses than colleagues teaching face to face classes.

The issue of time spent teaching online is better understood in the context of the research conducted by Bender, Wood and Vredevoogd (2004). Their work examined the time necessary to facilitate the same course delivered in face-to-face (F2F) and distance settings. The courses were identical other than format. The instructors and teaching assistants for each course maintained daily time logs to track the time needed for each format. The logs were compared after the completion of the course. Nearly twice as much time was needed per student for the distance course versus the F2F course. Whereas only 5.91 hours per student were necessary for F2F, the distance course required 10.05 hours per student (Bender, et al.). Researchers identified factors such as time spent on e-mail correspondence, high student anxiety for first time distance learners, and difficulties using the technologies as attributing the higher distance workload.

Cavenaugh (2005) had concerns about the conclusions drawn by Bender, et al. (2004). The reliance on teaching assistants to keep accurate time logs, the inexperience of the instructor teaching an online class, and the fact the course had never before been

offered online were all identified limitations. So, Cavenaugh conducted a study of the time needed to teach an economics course in F2F and online formats. The selected course previously had been taught online and the instructor had three years of online teaching experience. Unlike the course in Bender, et al.'s study, the course chosen by Cavenaugh did not utilize teaching assistants. However, time logs were still used for data collection. Time was categorized as course preparation, time spent teaching, office hours, and final tasks.

Cavenaugh (2005) found nearly the same results as Bender, et al. (2004) even though he removed the limitations from the prior study. Regardless of the experience of the professor, the newness of a course, and the involvement of teaching assistants, the online section still took over twice as long per student as the F2F section. In fact, Cavenaugh found an even more extreme time difference per student, with 6.77 hours of time directly attributed to each individual online student versus three to four minutes per F2F student. Cavenaugh speculated reducing the amount of time spent communicating with each student would result in decreased course quality. These results raise serious questions about how eXtension will retain the quality associated with traditional Extension programs without overloading agents with additional demands on their time. Many already struggle to manage the stress caused by demands on their time (Ensle, 2005; Harder & Wingenbach, 2006; Place, Jacob, Summerhill, & Arrington, 2000).

Murphrey and Dooley's (2000) study of the diffusion of distance education technologies in a college of agriculture and life sciences identified weaknesses and threats instead of barriers. Weaknesses included slow action on critical issues and loss of

interaction, while career and job security, competition from public and private institutions, and misinformation on the Internet were all perceived threats (Murphrey and Dooley). All of these are serious concerns for Cooperative Extension to consider with eXtension. Agents are not likely to support less interaction with clientele and are even less likely to endorse an innovation they feel will threaten their job security. Additionally, if distance education truly is slow to respond to critical issues, this does not bode well for eXtension, which is designed to correct the same criticism of the traditional Extension system. Most importantly, the threat of misinformation on the Internet represents a risk to Extension's reputation as a trustworthy purveyor of non-biased, research-based information and may damage both eXtension and the traditional service.

Characteristics of Adopters

Rogers (2003) created five categories to define adopters. Adopter categories were originally developed to indicate the speed at which an individual adopts relative to his/her peers, but Rogers found adopters within the same category tend to share common characteristics. The relationship between adoption speed and adopter characteristics is such that knowledge of an individual's adopter category is also educative about his/her characteristics.

In general, formal education, literacy, cosmopoliteness, and higher social status are associated with earlier adopters (Rogers, 2003). *Innovators* are the first category of people in social system to adopt. They tend to be financially stable and have a high

tolerance of risk. *Early adopters* are respected opinion leaders within their local communities and may be considered the gatekeepers for an innovation. Members of the *early majority* are very social, but without the authority of early adopters. The *late majority* is skeptical. They are unlikely to adopt an innovation until is absolutely necessary or until their peers pressure them into doing so. *Laggards* are the last within a social system to adopt. They are characterized by their attachment to the past. Laggards are very localite and communicate most often with other laggards.

The categorization of an individual as a specific type of adopter is influenced by the speed with which the individual moves through the innovation-decision process. Rogers (2003) identified five stages in the innovation-decision process. These are: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. Li (2004) revised Rogers' stages with the addition of a "no knowledge" stage. The *no knowledge* stage includes potential adopters who have not yet heard of the innovation. The *knowledge* stage occurs "when an individual (or other decision-making unit) learns of the innovation's existence and gains some understanding of how it functions" (Rogers, 2003, p. 20). Individuals may then progress to the *persuasion* stage and develop an opinion about the innovation. Next, "an individual engages in activities that lead to a choice to adopt or reject the innovation" in the *decision* stage (Rogers, 2003, p. 20). Individuals choosing to adopt the innovation test their decision in the *implementation* stage. Finally, "confirmation occurs when an individual seeks reinforcement of an innovation-decision that has already been made" (Rogers, 2003, p. 20).

A study of the diffusion of Web-based distance education amongst faculty at the China Agricultural University examined the potential relationships between adopter characteristics, stage in the innovation-decision process, and the perceived characteristics of the innovation (Li, 2004; Li & Lindner, 2006). Data analysis revealed significant relationships between stage in the innovation-decision process and selected adopter characteristics. Innovation-decision stage was found to be related to compatibility, observability, complexity, and trialability, but not relative advantage.

Adopter characteristics correlated with stages in the innovation-decision process were: (a) professional area, (b) teaching experience, (c) distance education experience, and (d) level of education. Social science faculty were more likely to categorize themselves in the later stages of the innovation-decision process than physical science faculty. Teaching experience was positively correlated with adoption. However, faculty members with over twenty years of experience were less advanced in the innovation-decision process than faculty with less experience. Most notable was the negative correlation between level of education and stage in the innovation-decision process. Faculty members with doctoral degrees categorized themselves in the early stages, while faculty members with bachelor degrees perceived themselves to be in the later stages. Li and Lindner's (2006) results challenged Roger's (2003) description of highly educated people as innovators, early adopters, or early majority.

Dromgoole and Boleman (2006) conducted a Delphi panel study with Texas Extension agents. In part, the objectives of the study were to determine the advantages and disadvantages of using distance education as programming tool for Extension. The

study also examined the type of programs most suitable for distance education. Programs typically associated with horticulture, such as lawn and garden care, were valued the highest. Topics related to 4-H and agriculture were moderately valued. Family and consumer science topics were perceived to have the lowest value. These findings indicate a need to include programmatic area as a demographic variable in the study of eXtension. It is possible agents' perceptions of eXtension will be related to their programmatic area.

A census survey was conducted in North Carolina's Cooperative Extension system to compare employee characteristics with levels of computer anxiety and communication preference (Emmons, 2003). Emmons found that computer anxiety did exist amongst the employees, but that it did not influence their communication preferences. Characteristics affecting computer anxiety included: (a) gender, (b) level of education, (c) age, and (d) computer experience. The same characteristics were found to be significantly related to Internet usage within a similar Extension population (Owen, 1999) as well as significantly related to faculty participation in distance education at a public university (Gupton, 2004).

Conceptual Framework

The conceptual framework of this study is adapted from Li (2004). Li used Rogers' (2003) theory of the diffusion of innovations as a theoretical framework to study the adoption of web-based distance education (WBDE). Li conceptualized faculty

members' perceptions of the attributes and barriers of WBDE as dependent upon their stages in the innovation-decision process and their personal characteristics.

This study departs from that model in that agents' stages in the innovation-decision process are conceptualized as dependent upon agents' perceptions of the characteristics and barriers of eXtension and their personal characteristics. Figure 1 illustrates the conceptual framework for this study.

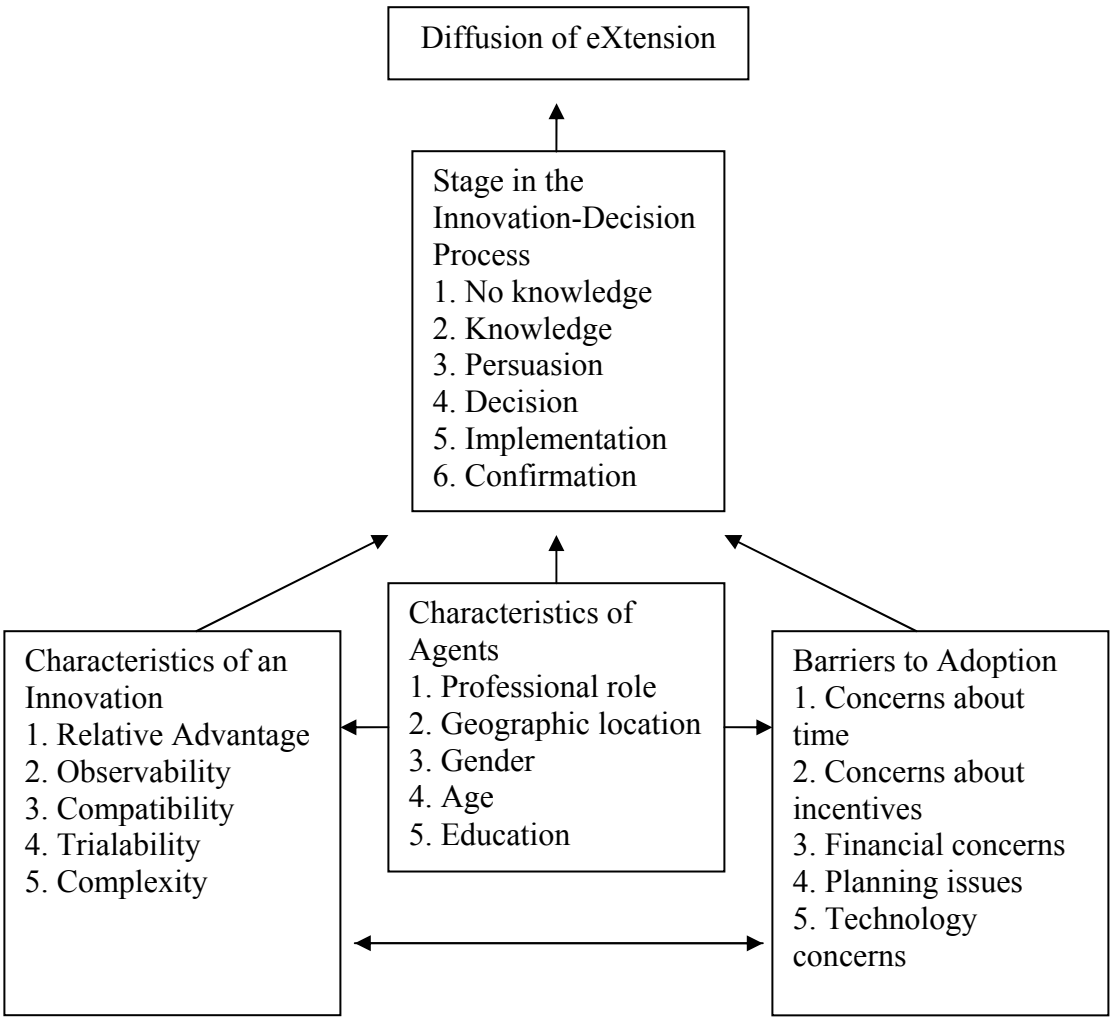

Figure 1. Conceptual framework for the diffusion of eXtension.

CHAPTER III

METHODOLOGY

A descriptive and correlational design was used for this study. The target population was Texas Cooperative Extension agents employed in 2007. According to the Texas Cooperative Extension office, there were 533 county agents (K. A. Bryan, personal communication, February 12, 2007). Bartlett, Kotrlik, and Higgins (2001) recommended using Cochran's (1977) formula for categorical data to calculate sample size when a categorical variable (stage in the innovation-decision process) has a primary role in data analysis. Cochran's correction was used to adjust the sample size, because it included more than five percent of the target population. The final sample size ($N = 237$) was based on the assumption of a 65% response rate. Random sampling was used to select participants for the study (Gall, Gall, & Borg, 2007).

County extension agents in Texas may specialize in agriculture, horticulture, 4-H, natural resources, family and consumer sciences, or nutrition. The vision of Texas Cooperative Extension is "To be the premier 21st Century outreach and continuing education organization in Texas responding to the needs of the people" (Texas Cooperative Extension, 2006, Vision). According to the Agency Strategic Plan for 2006 – 2011, programmatic priorities are focused on (a) sustainable agriculture, (b) natural resources, (c) economic development, (d) physical and economic security for families, (e) youth development, and (f) increased accessibility (Texas Cooperative Extension, 2006).

An online questionnaire was used to collect data. The original instrument was developed by Li (2004) to examine the diffusion of distance education at the China Agricultural University. Li's instrument contained four sections examining (a) stage in the innovation-decision process, (b) the attributes of web-based distance education, (c) the barriers to web-based distance education (WBDE), and (d) the characteristics of respondents. Rogers' (2003) proposed characteristics of an innovation were used to measure attributes. Ten potential barriers to the adoption of WBDE were studied: (a) concerns about time, (b) concerns about incentives, (c) WBDE program credibility, (d) financial concerns, (e) planning issues, (f) conflict with traditional education, (g) fear of technology, (h) technical expertise, (i) administrative support, and (j) infrastructure. Demographic variables were: (a) professional area, (b) gender, (c) age, (d) level of education, (e) academic rank, (f) teaching experience, and (g) distance education experience.

Li's original instrument was modified by the researcher to fit the context of eXtension, based upon studies from the review of literature (Emmons, 2003; Li, 2004; Maguire, 2005; Rockwell, Schauer, Fritz, & Marx, 1999; Rogers, 2003; Seevers, 1999). It was then converted to an online format (see Appendix A for questionnaire layout). The questionnaire contained four sections examining (a) stage in the innovation-decision process, (b) the characteristics of eXtension, (c) the barriers to eXtension, and (d) the characteristics of respondents.

Section A of the questionnaire was designed to measure each participant's stage in the innovation-decision process. The first item was easy, interesting, and applicable to

everyone, as recommended by Dillman (2000). Participants were instructed to rate the ability of Cooperative Extension to meet the information needs of the general public in the 21st century using traditional delivery methods. Response options were "poor," "adequate," and "excellent." The second item asked participants to select the statement that most closely matched their innovation-decision stage. Participants could select from six stages. Five of the stages were based upon Rogers' (2003) theory of the innovation-decision process: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. A sixth stage, no knowledge, was included based upon Li's (2004) conclusion that the five stages failed to include adopters who had yet to encounter the innovation.

Section B was designed to measure the agents' perceptions of eXtension. Participants were asked to rate 28 statements based upon a six-point Likert-type scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). The scale was interpreted as follows: *Strongly Disagree* = 1.00 – 1.50, *Disagree* = 1.51 – 2.50, *Somewhat Disagree* = 2.51 – 3.50, *Somewhat Agree* = 3.51 – 4.50, *Agree* = 4.51 – 5.50, *Strongly Agree* = 5.51 – 6.00. Rogers' (2003) characteristics of an innovation were used to categorize the statements into constructs as follows: (a) relative advantage, (b) compatibility, (c) observability, (d) trialability, and (e) complexity. The findings of Rockwell, Schauer, Fritz, and Marx (1999) and Seevers (1999) contributed to the development of individual statements by the researcher. Statements were also modified from Li's (2004) original instrument. Table 1 includes a sample of the statements from Section B.

Table 1
Sample Statements from Section B: Characteristics of eXtension

Statement	Characteristic
Cooperative Extension will become more popular due to the addition of eXtension.	Relative Advantage
eXtension supports the mission of Cooperative Extension.	Compatibility
eXtension seems difficult to use.	Complexity
I can select the features of eXtension that I want to use.	Trialability
It will be easy for other Agents to observe if I am using eXtension.	Observability

Section C measured the agents' perceptions of potential barriers to the adoption of eXtension. A six-point Likert-type scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*) was used to rate 31 statements. The scale was interpreted as follows: *Strongly Disagree* = 1.00 – 1.50, *Disagree* = 1.51 – 2.50, *Somewhat Disagree* = 2.51 – 3.50, *Somewhat Agree* = 3.51 – 4.50, *Agree* = 4.51 – 5.50, *Strongly Agree* = 5.51 – 6.00. Categories suggested by Li (2004) and Maguire (2005) were used to cluster the statements into constructs. The constructs were (a) concerns about time, (b) concerns about incentives, (c) financial concerns, (d) planning issues, and (e) technology concerns. Individual statements in Section C consisted of a combination of researcher-developed statements and statements modified from Li (2004). A sample of statements from Section C is presented in Table 2.

Table 2
Sample Statements from Section C: Potential Barriers

Statement	Barrier
Lack of time available to access eXtension materials.	Concerns about time
Lack of monetary compensation for developing eXtension resources.	Concerns about incentives
My state Extension program does not have enough money to support eXtension.	Financial concerns
Lack of identified need (perceived or real) for eXtension.	Planning issues
Lack of agent access to computers.	Technology concerns

Selected personal characteristics (Extension role, county category, age, gender, and education) were measured in Section D. The variables were selected because of their relationships with adopter categories and the stages of the innovation-decision process (Rogers, 2003). Participants were asked to indicate their primary role (4-H/youth development, agriculture, family and consumer science, horticulture, natural resources, or nutrition education) in Extension as determined by percentage of responsibilities. County categories were measured using the designations (I, II, III, IV, V, VI, VII) created by Texas Cooperative Extension. Category designations are a function of county population and revenue. Increases in county population and revenue correspond with higher category designations (i.e., Harris County is in Category VII). Age was measured with categories (18-29, 30-39, 40-49, 50-59, 60+). Gender response options were male or female. Education response options were categorized according to highest degree obtained (high school, associate's, bachelor's, master's, or Ph.D).

A comment box was also provided in Section D to offer respondents the opportunity to provide additional feedback. The inclusion of the comment box was based

upon the idea of social exchange and rewards (Dillman, 2000). Data collected from the comment box were not treated as a variable for analysis in this study.

The instrument was reviewed for content validity by a panel of experts composed of faculty members in the Department of Agricultural Education, Leadership, and Communications at Texas A&M University and the national marketing director of eXtension. The wording for several statements was modified and additional statements were added to increase the likelihood of obtaining valid and reliable results.

Due to the need to survey human subjects, a request for exemption was submitted and approved by the Texas A&M University Internal Review Board in October 2006. An additional request was submitted and approved by the Montana State University Internal Review Board in November 2006 for the pilot study.

To test for reliability and face validity, a pilot test was conducted with 88 Montana State Cooperative Extension agents not included in the sample population. On December 4, 2006, a pre-notice was e-mailed to participants notifying them of the upcoming survey. Four days later, instructions for completing and assessing the pilot questionnaire, a unique password, and a hyperlink to the information and consent page were e-mailed to each participant. There were two e-mails returned due to invalid addresses and two people opted out; this reduced the accessible population to 84 agents. Access to the questionnaire was granted to participants who opted to enter their passwords on the information and consent page. The agents were also notified about the pilot test by Doug Steele, Vice-Provost and Director of Extension, in his weekly e-newsletter. A response rate of 56% ($N = 47$) was obtained.

Cronbach's alpha coefficient was calculated for each internal scale (Cronbach, 1951). Cronbach's alpha coefficients measure the internal consistency of items within a scale and can be used to indicate reliability. A reliability level of .80 or higher is considered acceptable (Gall, Gall, & Borg, 2007). Reliability levels for the internal scales are presented in Table 3. One item was removed to increase the reliability of the observability scale.

Table 3
Reliability Levels of Internal Scales

	α Levels	
Internal Scale	Pilot Study	Formal Study
Relative Advantage	.836	.887
Compatibility	.837	.873
Complexity	.819	.860
Trialability	.814	.952
Observability	.826[a]	.881
Concerns about time	.902	.890
Concerns about incentives	.899	.924
Financial concerns	.880	.909
Planning issues	.837	.921
Technology concerns	.911	.883

Note: Reliability levels ≥ .80 were considered acceptable.
[a]Original α level was .758; one item was deleted.

Based upon pilot participant feedback, a response option for community development was added to the demographic item about primary role. Based upon feedback from the expert panel, the response options for residency were revised to use the county category nomenclature common to Texas Cooperative Extension. No other revisions were necessary.

Formal data collection with the finalized instrument began in February 2007. Data were collected according to Dillman's (2000) Tailored Design Method. On February 22, 2007, a pre-notice was e-mailed to the participants. The cover letter, a unique password, and a hyperlink to the information sheet and consent page were sent on February 26, 2007. Participants chose to enter passwords on the information and consent page to access the questionnaire. Of the original 237 addresses, 236 were valid. An attempt to correct the faulty e-mail address was made by contacting the State Cooperative Extension office. This effort resulted in an accessible population of 236. Four reminders were sent (March 1, March 5, March 8, and March 15, 2007) to increase response rate, as recommended by Dillman (2000). Data collection ceased at 12:00 p.m., on March 14, 2007.

Data Analysis

The data were analyzed using descriptive and inferential statistics in the Statistical Package for Social Sciences (SPSS, 14.0). The alpha level for data analysis was set *a priori* at .05. The independent variables for the study were (a) primary agent role, (b) county category, (c) education, (d) age, and (e) gender. The dependent variables for the study were: (a) stage in the innovation-decision process, (b) relative advantage, (c) compatibility, (d) complexity, (e) trialability, (f) observability, (g) concerns about time, (h) concerns about incentives, (i) financial concerns, (j) planning issues, and (k) technology concerns.

Objective One

Frequencies and percentages were calculated to describe the selected personal characteristics (primary agent role, county category, education, age, and gender) of Texas Cooperative Extension agents. The use of frequencies and percentages is appropriate to describe categorical data (Gall, Gall, & Borg, 2007).

Objective Two

Frequencies and percentages were used to describe the participants' stages in the innovation-decision process (no knowledge, knowledge, persuasion, decision, implementation, and confirmation). Innovation-decision stage was treated as a dependent variable in the study.

Objective Three

Agents' perceptions of eXtension were described by cumulatively summating the scores for individual items within each construct for each participant. The summated scores were then used to calculate the mean construct scores for each participant and the mean and standard deviation for each construct overall.

The constructs were consistent with the characteristics of an innovation: (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability, and (e) observability (Rogers, 2003). The means and standard deviations for all the items within each construct were also calculated.

Objective Four

There were five constructs which measured agents' perceptions of potential barriers to the adoption of eXtension: (a) concerns about time, (b) concerns about incentives, (c) financial concerns, (d) planning issues, and (e) technology concerns. The perceptions of potential barriers were described by cumulatively summating the scores for individual items within each construct for each participant. The summated scores were then used to calculate the mean construct scores for each participant and the means and standard deviations for each construct overall.

Objective Five

One-way analysis of variance (ANOVA) and *t*-tests were conducted to determine if significant differences existed between the selected personal characteristics (primary agent role, county category, education, age, and gender) and agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation (relative advantage, compatibility, observability, complexity, and trialability). Cohen's interpretation of effect sizes were used to evaluate the strength of association between the variables (Cohen, 1988; Cohen, 1992). ANOVA results were interpreted by defining small, medium, and large effect sizes at the .10, .25, and .40 levels, respectively (Cohen, 1988). Results from *t*-tests were interpreted by defining small, medium, and large effect sizes which were respectively determined at the .20, .50, and .80 levels (Cohen, 1988). When appropriate, post hoc tests were conducted to identify the source of significant differences between groups.

Objective Six

One-way analysis of variance (ANOVA) and *t*-tests were conducted to determine if significant differences existed between agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension based upon selected personal characteristics (primary agent role, county category, education, age, and gender). Cohen's interpretation of effect sizes were used to evaluate the strength of association between the variables (Cohen, 1988; Cohen, 1992). ANOVA results were interpreted by defining small, medium, and large effect sizes at the .10, .25, and .40 levels, respectively (Cohen, 1988). Results from *t*-tests were interpreted by defining small, medium, and large effect sizes were at the .20, .50, and .80 levels, respectively (Cohen, 1988). When appropriate, post hoc tests were conducted to identify the source of significant differences between groups.

Objective Seven

Relationships between perceptions of eXtension and potential barriers were described by calculating Pearson's product-moment correlation coefficient. Pearson's *r* describes the strength of a relationship between two continuous variables (Gall, Gall, & Borg, 2007). Davis' (1971) interpretation of Pearson's *r* was used to describe the strength of the relationships (Table 4).

Table 4
Relationship Descriptors

Descriptor	Coeffiecient (*r*)
Very strong	$r \geq .70$
Substantial	$.50 \geq r \geq .69$
Moderate	$.30 \geq r \geq .49$
Low	$.10 \geq r \geq .29$
Negligible	$.01 \geq r \geq .09$

Objective Eight

A chi-square test was conducted to test the distribution of participants between the stages in the innovation-decision process. Chi-square tests can be used to determine if significant differences exist between the observed and expected frequencies for a data variable with two or more categories (Gall, Gall, & Borg, 2007). The data were evaluated using chi-square statistics and levels of significance.

Objective Nine

Discriminant function analysis was used to determine the predictor variables for stage in the innovation-decision process, based upon agents' perceptions of the characteristics of eXtension, perceptions of the barriers to the diffusion of eXtension, and selected personal characteristics. According to Gall, Gall, and Borg (2007), discriminant function analysis is the appropriate statistical procedure when the criterion variable is categorical.

CHAPTER IV

FINDINGS

This chapter presents the response rate, a comparison of early and late respondents, and the findings by study objective.

Response Rate

The target population was Texas Cooperative Extension agents employed in 2007. According to the Texas Cooperative Extension office, there were 533 county agents (K. A. Bryan, personal communication, February 12, 2007). Random sampling was used to select participants ($N = 237$) for the study (Gall, Gall, & Borg, 2007).

An initial response rate of 21.9% ($n = 52$) was received. Efforts were made to increase response rate through the use of four e-mailed reminders. A final response rate of 66.90% ($N = 158$) was obtained. Eight participants opted out. There were 25 responses removed due to missing data, reducing the number of usable responses to 125.

Non-Response Error

Non-response error was controlled according to one of the procedures suggested by Lindner, Murphy, and Briers (2001). Mann-Whitney *U* tests and two-group independent *t*-tests were used to compare the early wave of respondents ($n = 62$) to the last wave of respondents ($n = 63$) on the primary variables of interest (Gall, Gall, & Borg, 2007). Early respondents were defined as the first 50% to respond. Late

respondents were defined as the second 50% to respond. The primary variables of interest were (a) participants' stages in the innovation-decision process (no knowledge, knowledge, persuasion, decision, implementation, and confirmation), (b) agents' perceptions of eXtension (based on relative advantage, compatibility, complexity, trialability, and observability), and (c) agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension.

Data in Table 5 indicated no significant difference ($p > .05$) between early and late respondents existed for participants' stage in the innovation-decision process.

Table 5
Comparison of Early and Late Respondents' Stage in Innovation-Decision Process

Response	NK	K	P	D	I	C	*u*	*p*
	f	*f*	*f*	*f*	*f*	*f*	Rank	
Early[a]	18	36	1	2	3	2	62.16	.908
Late[b]	21	28	3	2	7	1	62.84	

Note. $N = 124$. NK = no knowledge; K = knowledge; P = persuasion; D = decision; I = implementation; C = confirmation.
[a]$n = 62$. [b]$n = 62$.

As shown in Table 6, no significant differences between early and late respondents were found for agents' perceptions of eXtension based on (a) relative advantage, $t\ (123) = 1.08$, $p > .05$; (b) compatibility, $t\ (123) = .19$, $p > .05$; (c) complexity, $t\ (123) = .50$, $p > .05$; or (d) trialability, $t\ (123) = .24$, $p > .05$. A significant difference between early and late respondents was found for agents' perceptions of eXtension based on observability, $t\ (123) = 2.21$, $p < .05$.

Table 6
Comparison of Early and Late Respondents' Perceptions of eXtension

Construct by Response	*n*	*M*	*SD*	*t*	*p*
Relative Advantage					
Early	62	3.68	.88	1.08	.28
Late	63	3.84	.77		
Compatibility					
Early	62	4.33	.93	.19	.85
Late	63	4.36	.80		
Complexity					
Early	62	4.52	.74	.50	.62
Late	63	4.44	.80		
Trialability					
Early	62	4.13	.98	.24	.81
Late	63	4.10	.77		
Observability					
Early	62	2.66	1.03	2.21*	.03
Late	63	3.04	.90		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree.*
*p <.05

Table 7 shows agents' perceptions of potential barriers to eXtension. There were no significant differences related to (a) concerns about time, t (123) = .20, p > .05; (b) concerns about incentives, t (123) = .50, p > .05; (c) financial concerns, t (123) = .52, p > .05; (d) planning issues, t (123) = 1.90, p > .05; or (e) technology concerns, t (123) = .41, p > .05.

Table 7
Comparison of Early and Late Respondents' Perceptions of Potential Barriers

Construct by Response	*n*	*M*	*SD*	*t*	*p*
Concerns about time					
Early	62	4.13	.85	.20	.84
Late	63	4.10	.90		
Concerns about incentives					
Early	62	3.85	1.00	.50	.62
Late	63	3.94	1.00		
Financial concerns					
Early	62	3.72	1.00	.52	.60
Late	63	3.82	1.02		
Planning issues					
Early	62	4.00	.97	1.90	.06
Late	63	3.68	.88		
Technology concerns					
Early	62	3.69	1.04	.41	.68
Late	63	3.62	.91		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Based upon the lack of significant differences between early and late respondents for the majority of the primary variables of interest, it was concluded the results could be generalized to the target population. However, there was a significant difference between early and late respondents for the primary variable of observability. Therefore, caution is urged before generalizing the respondents' perceptions of observability to any other population.

Objective One: Findings

Data for Texas Cooperative Extension County Extension agents' selected personal characteristics (primary agent role, county category, education, age, and gender) is reported in this section.

Primary Agent Role

Table 8 shows the primary agent roles reported by the respondents ($N = 125$). The majority of respondents had primary responsibilities in the areas of agriculture ($n = 45$), family and consumer sciences ($n = 39$), and 4-H/youth development ($n = 26$). There were fewer agents in the areas of horticulture ($n = 8$) and natural resources ($n = 3$). No respondents reported community development as a primary agent role.

Table 8
Distribution of Respondents by Primary Agent Role

Role	*f*	%
4-H/Youth development	26	20.80
Agriculture	45	36.00
Community development	0	0
Family and consumer sciences	39	31.20
Horticulture	8	6.40
Natural resources	3	2.40
Nutrition education	4	3.20

Residence

Responding agents were distributed throughout the seven county categories (see Table 9). Categories III, IV, and V collectively accounted for 61.6% of the respondents. The fewest number of respondents (n = 6) worked in Category VI counties.

Table 9
Distribution of Respondents by County Category

County Category	*f*	%
Category I	9	7.20
Category II	11	8.80
Category III	19	15.20
Category IV	39	31.20
Category V	19	15.20
Category VI	6	4.80
Category VII	11	8.80

Note. Category designations increase with county population and revenue.

Education

As shown in Table 10, all of the responding agents had completed a degree in higher education. There were 38 respondents who had completed a bachelor's degree. Due to the low number of respondents with a doctoral degree, respondents with either a master's or a doctoral degree (n = 87) were combined into a category called "graduate degree" for the purpose of this objective. No respondents reported having a terminal degree at the high school or associate's levels.

Table 10
Distribution of Respondents by Educational Attainment

Degree	*f*	%
High School	0	0
Associate's	0	0
Bachelor's	38	30.40
Graduate degree	87	69.60

Age

Table 11 shows the distribution of responding agents among four age ranges. Due to the low number of respondents in the 60+ age range, respondents in either the 50 - 59 range or 60+ range (n = 37) were combined into a category called "50+" for all data analysis in this study. The highest number of respondents (n = 41) reported their age in the 30 - 39 range. Thirty agents reported their age to be in the 40 - 49 range. The fewest number of agents were in the 18 - 29 years range (n = 19).

Table 11
Distribution of Respondents by Age Range

Age Range	*f*	%
18 - 29	19	15.20
30 - 39	41	32.80
40 - 49	30	24.00
50+	37	28.00

Gender

Table 12 shows the distribution of responding agents by gender. Approximately 46% of respondents were female and 51% were male.

Table 12
Distribution of Respondents by Gender

Gender	*f*	%
Female	58	46.40
Male	64	51.20

Objective Two: Findings

The second objective was to describe agents' stages in the innovation-decision process (no knowledge, knowledge, persuasion, decision, implementation, and confirmation). The majority of agents reported they were in the "no knowledge" (n = 39) or "knowledge" (n = 64) stages. The remaining agents were in the "implementation" (n = 10), "persuasion" (n = 4), "decision" (n = 4), or "confirmation" (n = 3) stages. The distribution of responding agents by stage in the innovation-decision process is shown in Table 13.

Table 13
Distribution of Respondents by Innovation-Decision Stage

Stage in the Innovation-Decision Process	Corresponding Items	*f*	%
No knowledge	I had never heard of eXtension before reading the description provided in this questionnaire.	39	31.20
Knowledge	I understand its purposes and features, but have not decided whether or not I like or dislike eXtension.	64	51.20
Persuasion	I have decided. I like or dislike eXtension.	4	3.20
Decision	I have decided. I will or will not use eXtension.	4	3.20
Implementation	I am using eXtension.	10	8.00
Confirmation	I have used eXtension long enough to evaluate whether or not eXtension will be part of my future in Extension.	3	2.40

Figure 2 displays the percentage of respondents in each of the stages in the innovation-decision process. Due to space constraints, the stages are abbreviated as follows: NK = no knowledge, K = knowledge, P = persuasion, D = decision, I = implementation, and C = confirmation.

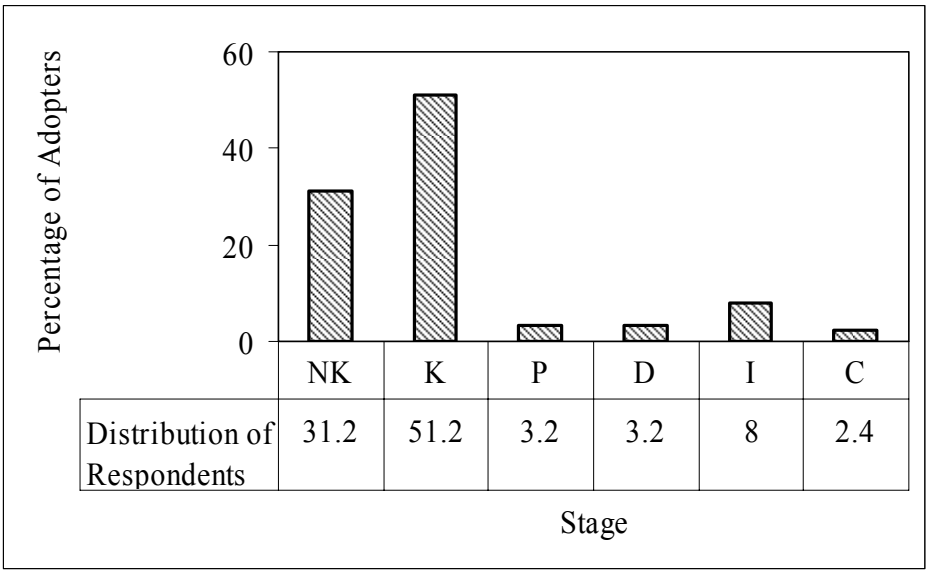

Figure 2. Distribution of respondents in the stages of the innovation-decision process.

Objective Three: Findings

The third objective was to describe agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation (relative advantage, compatibility, observability, complexity, and trialability). On a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*), agents tended to somewhat agree eXtension was not complex (M = 4.48, SD =

.77), was compatible with their values and beliefs (*M* = 4.35, *SD* = .87), was trialable (*M* = 4.11, *SD* = .88), and had a relative advantage (*M* = 3.75, *SD* = .82). Agents somewhat disagreed eXtension was observable (*M* = 2.85, *SD* = .98). A summary of the means and standard deviations for each construct is provided in Table 14.

Table 14
Respondents' Perceptions of eXtension by Construct

Construct	*M*	*SD*
Complexity	4.48	.77
Compatibility	4.35	.87
Trialability	4.11	.88
Relative Advantage	3.75	.82
Observability	2.85	.98

Note. *N* = 125. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Relative Advantage

Responses for the eight relative advantage items ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). Table 15 displays the means and standard deviations for each item. Respondents tended to somewhat agree with the statement, "eXtension increases the accessibility of Cooperative Extension programming" (*M* = 4.35, *SD* = 1.01). They tended to somewhat disagree with the statement, "I envision spending less time answering routine questions by referring clientele to eXtension" (*M* = 2.87, *SD* = 1.28).

Table 15
Respondents' Perceptions of the Relative Advantage of eXtension by Individual Response Item

Relative Advantage Items	*N*	*M*	*SD*
eXtension increases the accessibility of Cooperative Extension programming.	125	4.35	1.01
I envision finding information faster by using eXtension as a resource.	125	4.16	1.10
eXtension is a cost-savings effort that prevents duplication of efforts.	125	3.98	1.02
Using eXtension as a resource will make doing my job easier.	124	3.86	1.03
Cooperative Extension could become more popular due to the addition of eXtension.	125	3.83	1.01
eXtension creates more funding opportunities for Cooperative Extension.	125	3.69	1.07
eXtension provides agents with more time to serve traditional clientele.	123	3.26	1.23
I envision spending less time answering routine questions by referring clientele to eXtension.	124	2.87	1.28

Note. Overall *M* = 3.75, *SD* = .82. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Compatibility

Responses for the four compatibility items ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). Table 16 displays the means and standard deviations for each item. Respondents tended to agree with the statement "eXtension provides research-based information to the public" (*M* = 4.86, *SD* = .94). They somewhat agreed with the statement "eXtension can be used to cultivate sustainable relationships in the community" (*M* = 3.80, *SD* = 1.28).

Table 16
Respondents' Perceptions of the Compatibility of eXtension by Individual Response Item

Compatibility Items	*N*	*M*	*SD*
eXtension provides research-based information to the public.	125	4.86	.94
eXtension supports the mission of Cooperative Extension.	125	4.66	.99
Online programs are an acceptable way for Cooperative Extension to deliver programs.	125	4.41	1.23
My vision for the future of Cooperative Extension includes eXtension.	124	4.27	1.14
eXtension will allow me to deliver programs based upon the needs of clientele.	125	4.07	1.01
eXtension can be used to cultivate sustainable relationships in the community.	125	3.80	1.28

Note. Overall *M* = 4.35, *SD* = .87. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Observability

Responses for the three observability items ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). Table 17 displays the means and standard deviations for each item. Respondents tended to somewhat disagree with the statements "Agents will easily be able to identify people who are involved in eXtension" (*M* = 3.14, *SD* = 1.10), "The official eXtension website is well-publicized" (*M* = 2.74, *SD* = 1.09), and "eXtension is a highly visible program" (*M* = 2.69, *SD* = 1.08).

Table 17
Respondents' Perceptions of the Observability of eXtension by Individual Response Item

Observability Items	*N*	*M*	*SD*
Agents will easily be able to identify people who are involved in eXtension.	125	3.14	1.10
The official eXtension website is well-publicized.	125	2.74	1.09
eXtension is a highly visible program.	125	2.69	1.08

Note. Overall *M* = 2.85, *SD* = .98. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Complexity

Responses for the four complexity items ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*). Table 18 displays the means and standard deviations for each item. Respondents tended to agree with the statements, "E-mail is a tool that I am comfortable using" (*M* = 5.19, *SD* = .95), "Using online resources to access information is easy for me" (*M* = 4.68, *SD* = 1.03), and "I am good at navigating websites to find the information I need" (*M* = 4.66, *SD* = 1.13). The agents somewhat agreed with the statements "It will be easy for me to download information from eXtension to my computer" (*M* = 4.42, *SD* = 1.07), "Using eXtension seems simple" (*M* = 3.98, *SD* = .92), and "eXtension seems user-friendly" (*M* = 3.97, *SD* = .91).

Table 18
Respondents' Perceptions of the Complexity of eXtension by Individual Response Item

Complexity Items	*N*	*M*	*SD*
E-mail is a tool that I am comfortable using.	125	5.19	.95
Using online resources to access information is easy for me.	125	4.68	1.03
I am good at navigating websites to find the information I need.	125	4.66	1.13
It will be easy for me to download information from eXtension to my computer.	125	4.42	1.07
Using eXtension seems simple.	125	3.98	.92
eXtension seems user-friendly.	125	3.97	.91

Note. Overall *M* = 4.48, *SD* = .77. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Trialability

Responses for the four trialability items ranged from strongly disagree to strongly agree, on a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). Table 19 displays the means and standard deviations for each item. Respondents somewhat agreed with the statements "I can use eXtension without committing to develop new materials for it" (*M* = 4.20, *SD* = .94), "I can test key features of eXtension with no obligation for continued or future use" (*M* = 4.10, *SD* = .94), "I can select the features of eXtension that I want to use" (*M* = 4.08, *SD* = .94), and "I will be able to define the terms of my use of eXtension, if any" (*M* = 4.06, *SD* = .95).

Table 19
Respondents' Perceptions of the Trialability of eXtension by Individual Response Item

Trialability Items	*N*	*M*	*SD*
I can use eXtension without committing to develop new materials for it.	124	4.20	.94
I can test key features of eXtension with no obligation for continued or future use.	125	4.10	.94
I can select the features of eXtension that I want to use.	125	4.08	.94
I will be able to define the terms of my use of eXtension, if any.	124	4.06	.95

Note. Overall *M* = 4.11, *SD* = .88. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Objective Four

The fourth objective was to describe agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension. On a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*), agents tended to somewhat agree concerns about time (*M* = 4.12, *SD* = .87). concerns about incentives (*M* = 3.90, *SD* = 1.00), planning issues (*M* = 3.84, *SD* = .93), financial concerns (*M* = 3.77, *SD* = 1.01), and technology concerns (*M* = 3.66, *SD* = .97) were potential barriers to adoption of eXtension. The means and standard deviations for each construct are presented in Table 20.

Table 20
Respondents' Perceptions of Potential Barriers to eXtension by Construct

Construct	*N*	*M*	*SD*
Concerns about time	125	4.12	.87
Concerns about incentives	125	3.90	1.00
Planning issues	125	3.84	.93
Financial concerns	125	3.77	1.01
Technology concerns	125	3.66	.97

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Concerns about Time

Responses for the five items addressing potential concerns about time ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*). Table 21 displays the means and standard deviations for each item. Respondents tended to somewhat agree with the statements "Lack of time to learn how to incorporate eXtension into typical job responsibilities" ($M = 4.25$, $SD = 1.00$), "Lack of time to meet the needs of traditional Extension clientele" ($M = 4.14$, $SD = 1.04$), "Lack of time available to respond to online requests for information" ($M = 4.10$, $SD = 1.05$), "Lack of time available to search for information on eXtension" ($M = 4.05$, $SD = 1.09$), and "Lack of time available to access eXtension materials" ($M = 4.05$, $SD = 1.05$).

Table 21
Respondents' Perceptions of Concerns about Time as a Potential Barrier to eXtension by Individual Response Item

Concerns about Time Items	*N*	*M*	*SD*
Lack of time to learn how to incorporate eXtension into typical job responsibilities.	125	4.25	1.00
Lack of time to meet the needs of traditional Extension clientele.	125	4.14	1.04
Lack of time available to respond to online requests for information.	125	4.10	1.05
Lack of time available to search for information on eXtension.	124	4.05	1.09
Lack of time available to access eXtension materials.	125	4.05	1.05

Note. Overall *M* = 4.12, *SD* = .87. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Concerns about Incentives

Responses for the seven items addressing potential concerns about incentives ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*). Table 22 displays the means and standard deviations for each item. Respondents tended to somewhat agree with all seven statements. The statement "Lack of correlation between agent use of eXtension and performance evaluation" (*M* = 4.07, *SD* = 1.11) had the highest mean. The statement "Lack of support from state administrators" (*M* = 3.74, *SD* = 1.21) had the lowest mean.

Table 22
Respondents' Perceptions of Concerns about Incentives as a Potential Barrier to eXtension by Individual Response Item

Concerns about Incentives Items	*N*	*M*	*SD*
Lack of correlation between agent use of eXtension and performance evaluation.	124	4.07	1.11
Lack of county/parish recognition for using eXtension.	124	4.04	1.20
Lack of salary increase for using eXtension.	125	4.00	1.25
Lack of monetary compensation for developing eXtension resources.	125	3.92	1.15
Lack of awards for involvement with eXtension.	124	3.75	1.21
Lack of support from local administrators.	125	3.75	1.28
Lack of support from state administrators.	125	3.74	1.21

Note. Overall *M* = 3.90, *SD* = 1.00. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Financial Concerns

Responses for the five items addressing potential financial concerns ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*). Table 23 displays the means and standard deviations for each item. Respondents tended to somewhat agree with the statement "Cost of purchasing the necessary computer technologies" (*M* = 4.09, *SD* = 1.24). They tended to somewhat disagree with the statement "My state Extension program does not have enough money to support eXtension" (*M* = 3.46, *SD* = 1.07).

Table 23
Respondents' Perceptions of Financial Concerns as a Potential Barrier to eXtension by Individual Response Item

Financial Concerns Items	*N*	*M*	*SD*
Cost of purchasing the necessary computer technologies.	125	4.09	1.24
Lack of financial resources to promote eXtension locally.	125	3.96	1.20
Concerns about sharing revenue from eXtension with multiple partnering institutions.	125	3.69	1.16
Lack of financial resources to support the necessary computer technologies.	125	3.66	1.24
My state Extension program does not have enough money to support eXtension.	123	3.46	1.07

Note. Overall *M* = 3.77, *SD* = 1.01. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Planning Issues

Responses for the five items addressing potential planning issues ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*). Table 24 displays the means and standard deviations for each item. Respondents tended to somewhat agree with all five statements. The statement "Lack of planned opportunities for agents to learn about eXtension" (*M* = 4.10, *SD* = 1.08) had the highest mean. The statement "Lack of strategic planning for eXtension" (*M* = 3.70, *SD* = 1.05) had the lowest mean.

Table 24
Respondents' Perceptions of Planning Issues as a Potential Barrier to eXtension by Individual Response Item

Planning Issues Items	*N*	*M*	*SD*
Lack of planned opportunities for agents to learn about eXtension.	124	4.10	1.08
Lack of shared vision for the role of eXtension with traditional Extension structure.	125	3.88	1.09
Lack of identified need (perceived or real) for eXtension.	125	3.76	1.03
Lack of coordination between participating eXtension partners.	125	3.73	1.07
Lack of strategic planning for eXtension.	125	3.70	1.05

Note. Overall *M* = 3.84, *SD* = .93. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Technology Concerns

Responses for the nine items addressing potential technology concerns ranged from "strongly disagree" to "strongly agree" on a six-point scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*). Table 25 displays the means and standard deviations for each item. Respondents tended to somewhat agree "Concern about loss of face-to-face contact with clientele" (*M* = 4.31, *SD* = 1.41) was a potential barrier to the diffusion of eXtension. They tended to somewhat disagree "Lack of agent access to computers" (*M* = 3.07, *SD* = 1.36) was a potential barrier.

Table 25
Respondents' Perceptions of Technology Concerns as a Potential Barrier to eXtension by Individual Response Item

Technology Concerns Items	*N*	*M*	*SD*
Concern about loss of face-to-face contact with clientele.	124	4.31	1.41
Lack of technical support.	125	4.06	1.38
Lack of training programs to learn how to use eXtension.	124	4.06	1.25
Concern about loss of control of Extension information at the local level.	125	3.57	1.38
Concern for legal issues (e.g., computer crime, hackers, software piracy, copyright).	125	3.53	1.30
Lack of agent access to adequate Internet connection speeds.	123	3.46	1.42
Concern about intellectual property rights.	125	3.44	1.10
Concern that eXtension will be used to replace local agent positions.	125	3.40	1.48
Lack of agent access to computers.	125	3.07	1.36

Note. Overall $M = 3.66$, $SD = .97$. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Objective Five

The fifth objective was to determine if differences existed between agents' perceptions of eXtension based upon selected personal characteristics (primary agent role, county category, education, age, and gender). Agents' perceptions of eXtension were described according to (a) relative advantage, (b) compatibility, (c) observability, (d) complexity, and (e) trialability.

Primary Agent Role

Responding agents significantly differed in their perceptions of eXtension by primary agent role (see Table 26). Perceptions of the complexity of eXtension were significantly different by primary agent role, $F(5, 119) = 1.30$, $p < .05$. The effect size was negligible ($\eta^2 = .09$). Fisher's test of least significant differences was conducted to

determine the source of the difference between groups with regards to the characteristic of complexity. 4-H ($M = 4.63$, $SD = .60$) was significantly different ($p < .05$) from Horticulture ($M = 3.90$, $SD = .83$). Agriculture ($M = 4.31$, $SD = .88$) was significantly different ($p < .05$) from Family and Consumer Sciences ($M = 4.67$, $SD = .68$). Family and Consumer Sciences ($M = 4.67$, $SD = .68$) was significantly different ($p < .01$) from Horticulture ($M = 3.90$, $SD = .83$).

There were no other significant differences between perceptions of eXtension by primary role. Perceptions of the relative advantage of eXtension were not significantly different by primary agent role, F (5, 119) = 1.46, $p > .05$. The effect size was negligible ($\eta^2 = .06$). Perceptions of the compatibility of eXtension were not significantly different by primary agent role, F (5, 119) = 1.41, $p > .05$. The effect size was negligible ($\eta^2 = .06$). Perceptions of the observability of eXtension were not significantly different by primary agent role, F (5, 119) = .89, $p > .05$. The effect size was negligible ($\eta^2 = .04$). Perceptions of the trialability of eXtension were not significantly different by primary agent role, F (5, 119) = 1.13, $p > .05$. The effect size was negligible ($\eta^2 = .05$).

Table 26
Analysis of Variance for Perceptions of eXtension by Primary Agent Role

Construct	*n*	*M*	*SD*	*F*	*p*
Relative Advantage					
Nutrition Education	4	4.19	1.03	1.46	.20
Family and Consumer Sciences	39	3.94	.76		
4-H	26	3.70	.73		
Agriculture	45	3.69	.89		
Natural Resources	3	3.58	.19		
Horticulture	8	3.20	.90		
Compatibility					
Family and Consumer Sciences	39	4.60	.83	1.41	.23
Nutrition Education	4	4.54	.50		
4-H	26	4.33	.81		
Agriculture	45	4.20	.93		
Horticulture	8	4.00	.89		
Natural Resources	3	3.90	.49		
Observability					
Natural Resources	3	3.67	.67	.89	.49
Nutrition Education	4	3.42	1.13		
4-H	26	2.91	.86		
Family and Consumer Sciences	39	2.83	1.01		
Agriculture	45	2.79	1.02		
Horticulture	8	2.54	1.01		
Complexity					
Nutrition Education	4	4.79	.76	1.30*	.05
Family and Consumer Sciences	39	4.67	.68		
Natural Resources	3	4.67	.29		
4-H	26	4.63	.60		
Agriculture	45	4.31	.88		
Horticulture	8	3.90	.83		
Trialability					
Natural Resources	3	4.50	.87	1.13	.35
Family and Consumer Sciences	39	4.33	.89		
Nutrition Education	4	4.13	.83		
4-H	26	4.12	.89		
Agriculture	45	3.96	.86		
Horticulture	8	3.78	.91		

Note. Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.
*p <.05.

County Category

Responding agents did not significantly differ in their perceptions of eXtension by county category (see Table 27). Perceptions of the relative advantage of eXtension were not significantly different by county category, F (6, 107) = .49, $p > .05$. The effect size was negligible ($\eta^2 = .03$). Perceptions of the compatibility of eXtension were not significantly different by county category, F (6, 107) = .58, $p > .05$. The effect size was negligible ($\eta^2 = .03$). Perceptions of the observability of eXtension were not significantly different by county category, F (6, 107) = .40, $p > .05$. The effect size was negligible ($\eta^2 = .02$). Perceptions of the complexity of eXtension were not significantly different by county category, F (6, 107) = .90, $p > .05$. The effect size was negligible ($\eta^2 = .05$). Perceptions of the trialability of eXtension were not significantly different by county category, F (6, 107) = 1.86, $p > .05$. The effect size was negligible ($\eta^2 = .09$).

Table 27
Analysis of Variance for Perceptions of eXtension by County Category

Construct	*n*	*M*	*SD*	*F*	*p*
Relative Advantage					
Category VI	6	4.04	.91	.49	.82
Category I	9	3.86	1.03		
Category III	19	3.80	.70		
Category IV	39	3.80	.87		
Category II	11	3.76	1.08		
Category V	19	3.55	.60		
Category VII	11	3.53	.88		
Compatibility					
Category VI	6	4.75	.75	.58	.75
Category VII	11	4.44	1.10		
Category IV	39	4.44	.91		
Category V	19	4.35	.72		
Category III	19	4.25	.63		
Category I	9	4.13	1.30		
Category II	11	4.09	.94		
Observability					
Category VII	11	3.15	.74	.40	.88
Category IV	39	2.90	.96		
Category V	19	2.86	.96		
Category III	19	2.79	1.09		
Category VI	6	2.67	1.21		
Category II	11	2.64	1.22		
Category I	9	2.59	.94		
Complexity					
Category VII	11	4.70	.78	.90	.50
Category IV	39	4.60	.62		
Category VI	6	4.58	.77		
Category III	19	4.45	.77		
Category II	11	4.38	.94		
Category V	19	4.25	.81		
Category I	9	4.12	1.12		
Trialability					
Category IV	39	4.36	.62	1.86	.09
Category III	19	4.26	1.08		
Category II	11	4.14	.98		
Category VII	11	4.11	1.12		
Category I	9	4.00	1.05		
Category VI	6	4.00	.63		
Category V	19	3.55	.98		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Education

It should be noted there were no respondents who reported terminal degrees at the high school or associate's level. Due to the extremely low number of respondents in the doctoral group, it was excluded from the analysis of differences.

As shown in Table 28, no significant differences existed between respondents' perceptions of eXtension by education. Perceptions of the relative advantage of eXtension were not significantly different by education, t (122) = .87, p > .05. The effect size was negligible (d = .18). Perceptions of the compatibility of eXtension were not significantly different by education, t (122) = .32, p > .05. The effect size was negligible (d = -.07). Perceptions of the complexity of eXtension were not significantly different by education, t (122) = .53, p > .05. The effect size was negligible (d = .10). Perceptions of the trialability of eXtension were not significantly different by education, t (122) = 1.65, p > .05. The effect size was small (d = .33). Perceptions of the observability of eXtension were not significantly different by education, t (122) = .79, p > .05. The effect size was negligible (d = .15).

Table 28
Comparison of Respondents' Perceptions of eXtension by Education

Construct by Education	*n*	*M*	*SD*	*t*	*p*
Relative Advantage					
Bachelor's	38	3.86	.70	.87	.38
Master's	86	3.72	.86		
Compatibility					
Bachelor's	38	4.31	.75	-.32	.75
Master's	86	4.37	.92		
Complexity					
Bachelor's	38	4.54	.80	.53	.60
Master's	86	4.46	.76		
Trialability					
Bachelor's	38	4.32	.70	1.65	.10
Master's	86	4.05	.92		
Observability					
Bachelor's	38	2.96	1.04	.79	.43
Master's	86	2.81	.96		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Age

Responding agents did not significantly differ in their perceptions of eXtension by age (see Table 29). Perceptions of the relative advantage of eXtension were not significantly different by age, F (3, 121) = .03, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of the compatibility of eXtension were not significantly different by age, F (3, 121) = .32, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of the observability of eXtension were not significantly different by age, F (3, 121) = .35, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of the complexity of eXtension were not significantly different by age, F (3, 121) = .20, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of the trialability of eXtension were not

significantly different by age, F (3, 121) = .10, p > .05. The effect size was negligible (η^2 = .01).

Table 29
Analysis of Variance for Perceptions of eXtension by Age

Construct	*n*	*M*	*SD*	*F*	*p*
Relative Advantage					
50+	35	3.78	.96	.03	1.00
18 – 29	19	3.76	.56		
40 – 49	30	3.75	.85		
30 – 39	41	3.73	.81		
Compatibility					
30 – 39	41	4.41	.82	.32	.81
40 – 49	30	4.36	.83		
50+	35	4.35	.98		
18 – 29	19	4.18	.83		
Observability					
30 – 39	41	2.93	.81	.35	.79
50+	35	2.92	1.12		
18 – 29	19	2.75	1.04		
40 – 49	30	2.73	1.00		
Complexity					
50+	35	4.54	.74	.20	.89
30 – 39	41	4.50	.77		
18 – 29	19	4.49	.76		
40 – 49	30	4.39	.84		
Trialability					
18 – 29	19	4.21	.72	.10	.96
40 – 49	30	4.12	.75		
50+	35	4.10	1.10		
30 – 39	41	4.08	.85		

Note. The 50+ category contains respondents who chose the 50 - 59 range or the 60+ age range. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Gender

As shown in Table 30, a significant difference between female and male respondents was found for agents' perceptions of eXtension. Perceptions of the compatibility of eXtension were significantly different by gender, t (120) = 2.03, $p < .05$. The effect size was small ($d = .37$).

There were no other significant differences between respondents' perceptions of eXtension based upon gender. Perceptions of the relative advantage of eXtension were not significantly different by gender, t (120) = 1.58, $p > .05$. The effect size was small ($d = .29$). Perceptions of the complexity of eXtension were not significantly different by gender, t (120) = 1.70, $p > .05$. The effect size was small ($d = .31$). Perceptions of the trialability of eXtension were not significantly different by gender, t(120) = 1.50, $p > .05$. The effect size was small ($d = .27$). Perceptions of the observability of eXtension were not significantly different by gender, t (120) = .37, $p > .05$. The effect size was negligible ($d = -.06$).

Table 30
Comparison of Respondents' Perceptions of eXtension by Gender

Construct by Gender	*n*	*M*	*SD*	*t*	*p*
Relative Advantage					
Female	58	3.88	.76	1.58	.12
Male	64	3.65	.83		
Compatibility					
Female	58	4.51	.82	2.03*	.04
Male	64	4.20	.85		
Complexity					
Female	58	4.61	.68	1.70	.09
Male	64	4.38	.80		
Trialability					
Female	58	4.25	.84	1.50	.14
Male	64	4.02	.88		
Observability					
Female	58	2.82	.93	.37	.72
Male	64	2.88	1.00		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.
*$p < .05$.

Objective Six

The sixth objective was to determine if significant differences existed between agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension based upon selected personal characteristics (primary agent role, county category, education, age, and gender).

Primary Agent Role

Responding agents did not significantly differ in their perceptions of potential barriers to eXtension by primary agent role (see Table 31). Perceptions of concerns about time were not significantly different by primary agent role, F (5, 119) = .26, p > .05. The effect size was negligible (η^2 = .01). Perceptions of concerns about incentives were not significantly different by primary agent role, F (5, 119) = 1.04, p > .05. The effect size was negligible (η^2 = .04). Perceptions of financial concerns were not significantly different by primary agent role, F (5, 119) = 1.33, p > .05. The effect size was negligible (η^2 = .05). Perceptions of planning issues were not significantly different by primary agent role, F (5, 119) = .79, p > .05. The effect size was negligible (η^2 = .03). Perceptions of technology concerns were not significantly different by primary agent role, F (5, 119) = .57, p > .05. The effect size was negligible (η^2 = .02).

Table 31
Analysis of Variance for Perceptions of Potential Barriers by Primary Agent Role

Construct	*n*	*M*	*SD*	*F*	*p*
Concerns about time					
Natural Resources	3	4.40	.69	.26	.93
4-H	26	4.25	.87		
Nutrition Education	4	4.20	.37		
Horticulture	8	4.18	.57		
Family and Consumer Sciences	39	4.07	.94		
Agriculture	45	4.05	.92		
Concerns about incentives					
4-H	26	4.22	1.00	1.04	.40
Nutrition Education	4	4.19	.70		
Natural Resources	3	4.14	.29		
Family and Consumer Sciences	39	3.88	1.02		
Horticulture	8	3.82	.47		
Agriculture	45	3.70	1.07		
Financial concerns					
Natural Resources	3	4.20	1.22	1.33	.26
4-H	26	4.13	.92		
Horticulture	8	3.98	1.24		
Family and Consumer Sciences	39	3.71	1.07		
Agriculture	45	3.59	.94		
Nutrition Education	4	3.30	.95		
Planning issues					
4-H	26	4.12	.77	.79	.56
Horticulture	8	3.88	.72		
Family and Consumer Sciences	39	3.85	.99		
Nutrition Education	4	3.80	.54		
Agriculture	45	3.68	1.04		
Natural Resources	3	3.53	.50		
Technology concerns					
Horticulture	8	3.88	.54	.57	.73
4-H	26	3.79	.88		
Family and Consumer Sciences	39	3.68	1.10		
Agriculture	45	3.59	.95		
Nutrition Education	4	3.28	.87		
Natural Resources	3	3.07	1.41		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

County Category

Responding agents did not significantly differ in their perceptions of potential barriers to eXtension by county category (see Table 32). Perceptions of concerns about time were not significantly different by county category, F (6, 107) = 1.11, $p > .05$. The effect size was negligible ($\eta^2 = .06$). Perceptions of concerns about incentives were not significantly different by county category, F (6, 107) = 1.48, $p > .05$. The effect size was negligible ($\eta^2 = .08$). Perceptions of financial concerns were not significantly different by county category, F (6, 107) = 1.73, $p > .05$. The effect size was negligible ($\eta^2 = .09$). Perceptions of planning issues were not significantly different by county category, F (6, 107) = 1.29, $p > .05$. The effect size was negligible ($\eta^2 = .07$). Perceptions of technology concerns were not significantly different by county category, F (6, 107) = 1.53, $p > .05$. The effect size was negligible ($\eta^2 = .08$).

Table 32
Analysis of Variance for Perceptions of Potential Barriers by County Category

Construct	*n*	*M*	*SD*	*F*	*p*
Concerns about time					
Category VI	6	4.77	.69	1.11	.36
Category IV	39	4.30	.87		
Category III	19	4.16	1.17		
Category V	19	4.13	.68		
Category II	11	4.05	1.04		
Category VII	11	3.95	.56		
Category I	9	3.76	.75		
Concerns about incentives					
Category VI	6	4.93	.91	1.48	.19
Category II	11	4.06	.92		
Category I	9	4.02	.95		
Category IV	39	3.95	.85		
Category VII	11	3.75	1.06		
Category III	19	3.72	1.26		
Category V	19	3.67	.99		
Financial concerns					
Category VI	6	4.37	.63	1.73	.12
Category I	9	4.13	1.09		
Category II	11	3.98	1.24		
Category V	19	3.86	.75		
Category IV	39	3.83	1.02		
Category III	19	3.43	1.14		
Category VII	11	3.15	1.02		
Planning issues					
Category II	11	4.22	1.23	1.30	.27
Category VI	6	4.13	.99		
Category III	19	4.01	1.21		
Category V	19	3.89	.58		
Category I	9	3.78	.50		
Category IV	39	3.75	.91		
Category VII	11	3.24	1.05		
Technology concerns					
Category VI	6	4.26	.76	1.53	.18
Category I	9	4.23	.52		
Category II	11	3.82	1.16		
Category V	19	3.77	.73		
Category IV	39	3.53	.87		
Category III	19	3.43	1.08		
Category VII	11	3.39	1.24		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Education

It should be noted there were no respondents who reported terminal degrees at the high school or associate's level. As shown in Table 33, a significant difference existed between respondents' perceptions of barriers to eXtension by education. Perceptions of concerns about incentives were significantly different by education, t (122) = 2.03, $p < .05$. The effect size was small (d = -.42).

There were no other significant differences between respondents' perceptions of barriers to eXtension by education. Perceptions of concerns about time were not significantly different by education, t (122) = 1.87, $p > .05$. The effect size was small (d = -.38). Perceptions of financial concerns were not significantly different by education, t (122) = .11, $p > .05$. The effect size was negligible (d = -.02). Perceptions of planning issues were not significantly different by education, t (122) = .04, $p > .05$. The effect size was negligible (d = .00). Perceptions of technology concerns were not significantly different by education, t (122) = .50, $p > .05$. The effect size was negligible (d = -.10).

Table 33
Comparison of Respondents' Perceptions of Potential Barriers by Education

Construct by Education	*n*	*M*	*SD*	*t*	*p*
Concerns about time					
Bachelor's	38	3.89	.77	1.87	.06
Master's	86	4.21	.90		
Concerns about incentives					
Bachelor's	38	3.61	.78	2.03*	.05
Master's	86	4.00	1.04		
Financial concerns					
Bachelor's	38	3.77	.89	.11	.92
Master's	86	3.79	1.06		
Planning issues					
Bachelor's	38	3.86	.86	.04	.97
Master's	86	3.86	.94		
Technology concerns					
Bachelor's	38	3.59	.88	.50	.62
Master's	86	3.68	1.01		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.
*$p < .05$.

Age

Responding agents did not significantly differ in their perceptions of potential barriers to eXtension by age (see Table 34). Perceptions of concerns about time were not significantly different by age, F (3, 121) = .22, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of concerns about incentives were not significantly different by age, F (3, 121) = .48, $p > .05$. The effect size was negligible ($\eta^2 = .01$). Perceptions of financial concerns were not significantly different by age, F (3, 121) = 1.22, $p > .05$. The effect size was negligible ($\eta^2 = .03$). Perceptions of planning issues were not significantly different by age, F (3, 121) = .62, $p > .05$. The effect size was negligible (η^2

= .02). Perceptions of technology concerns were not significantly different by age, F (3, 121) = .18, $p > .05$. The effect size was negligible ($\eta^2 = .01$).

Table 34
Analysis of Variance for Perceptions of Potential Barriers by Age

Construct	*n*	*M*	*SD*	*F*	*p*
Concerns about time					
18 – 29	19	4.19	.85	.22	.89
50+	35	4.16	.88		
40 – 49	30	4.14	.96		
30 – 39	41	4.03	.83		
Concerns about incentives					
18 – 29	19	3.97	.91	.48	.70
50+	35	3.96	1.18		
30 – 39	41	3.95	.95		
40 – 49	30	3.70	.89		
Financial concerns					
18 – 29	19	4.06	.94	1.22	.30
50+	35	3.81	1.13		
30 – 39	41	3.79	1.07		
40 – 49	30	3.51	.80		
Planning issues					
18 – 29	19	4.08	.91	.62	.60
30 – 39	41	3.86	.89		
40 – 49	30	3.76	.75		
50+	35	3.75	1.13		
Technology concerns					
50+	35	3.74	1.22	.18	.91
18 – 29	19	3.69	.89		
40 – 49	30	3.63	.83		
30 – 39	41	3.59	.88		

Note. The 50+ category contains respondents who chose the 50 - 59 range or the 60+ age range. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Gender

As shown in Table 35, no significant differences between female and male respondents were found for agents' perceptions of potential barriers to eXtension. Perceptions of concerns about time were not significantly different by gender, t (120) = .28, $p > .05$. The effect size was negligible ($d = .05$). Perceptions of concerns about incentives were not significantly different by gender, t (120) = .82, $p > .05$. The effect size was negligible ($d = .15$). Perceptions of financial concerns were not significantly different by gender, t (120) = .20, $p > .05$. The effect size was negligible ($d = -.04$). Perceptions of planning issues were not significantly different by gender, t (120) = .44, $p > .05$. The effect size was negligible ($d = .09$). Perceptions of technology concerns were not significantly different by gender, t (120) = .32, $p > .05$. The effect size was negligible ($d = .05$).

Table 35
Comparison of Respondents' Perceptions of Potential Barriers by Gender

Construct	*n*	*M*	*SD*	*t*	*p*
Concerns about time					
Female	58	4.13	.82	.28	.78
Male	64	4.09	.89		
Concerns about incentives					
Female	58	3.97	.94	.82	.42
Male	64	3.82	1.03		
Financial concerns					
Female	58	3.74	.93	.20	.85
Male	64	3.78	1.05		
Planning issues					
Female	58	3.87	.85	.44	.66
Male	64	3.79	1.01		
Technology concerns					
Female	58	3.67	1.00	.32	.75
Male	64	3.62	.86		

Note. Scale: 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Somewhat Disagree*, 4 = *Somewhat Agree*, 5 = *Agree*, 6 = *Strongly Agree*.

Objective Seven

The seventh objective was to describe the relationships between perceptions of eXtension and potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the diffusion of eXtension. Agents' perceptions of eXtension were described according to (a) relative advantage, (b) compatibility, (c) observability, (d) complexity, and (e) trialability.

Relative Advantage

The correlations between respondents' perceptions of relative advantage and the potential barriers to the diffusion of eXtension are presented in Table 36. A significant, low negative relationship existed between perceptions of concerns about time and perceptions of relative advantage, r (125) = -.21, $p < .05$. A significant, low negative relationship existed between perceptions of financial concerns and perceptions of relative advantage, r (125) = -.20, $p < .05$. No other significant relationships existed.

Table 36
Correlations between Perceptions of Potential Barriers to eXtension and Relative Advantage

	Relative Advantage		
Potential Barrier	*r*	*p*	Magnitude
Concerns about time	-.21*	.02	Low
Concerns about incentives	-.10	.29	Low
Financial concerns	-.20*	.03	Low
Planning issues	-.16	.08	Low
Technology concerns	-.06	.53	Negligible

Note. Magnitude: $.01 \geq r \geq .09$ = Negligible, $.10 \geq r \geq .29$ = Low, $.30 \geq r \geq .49$ = Moderate, $.50 \geq r \geq .69$ = Substantial, $r \geq .70$ = Very Strong.
*$p < .05$.

Compatibility

The correlations between respondents' perceptions of compatibility and the potential barriers to the diffusion of eXtension are presented in Table 37. A significant, low negative relationship existed between perceptions of financial concerns and perceptions of compatibility, r (125) = -.20, $p < .05$. A significant, low negative relationship existed between perceptions of planning issues and perceptions of compatibility, r (125) = -.23, $p < .05$. No other significant relationships existed.

Table 37
Correlations between Perceptions of Potential Barriers to eXtension and Compatibility

	Compatibility		
Potential Barrier	*r*	*p*	Magnitude
Concerns about time	-.10	.25	Low
Concerns about incentives	-.05	.55	Negligible
Financial concerns	-.20*	.02	Low
Planning issues	-.23*	.01	Low
Technology concerns	-.08	.36	Negligible

Note. Magnitude: .01 ≥ *r* ≥ .09 = Negligible, .10 ≥ *r* ≥ .29 = Low, .30 ≥ *r* ≥ .49 = Moderate, .50 ≥ *r* ≥ .69 = Substantial, *r* ≥ .70 = Very Strong.
*$p < .05$.

Observability

The correlations between respondents' perceptions of observability and the potential barriers to the diffusion of eXtension are presented in Table 38. There were no significant relationships between potential barriers to the diffusion of eXtension and observability. All associations were low or negligible.

Table 38
Correlations between Perceptions of Potential Barriers to eXtension and Observability

	Observability		
Potential Barrier	*r*	*p*	Magnitude
Concerns about time	-.01	.90	Negligible
Concerns about incentives	-.15	.11	Low
Financial concerns	-.10	.39	Low
Planning issues	-.03	.75	Negligible
Technology concerns	-.14	.12	Low

Complexity

The correlations between respondents' perceptions of complexity and the potential barriers to the diffusion of eXtension are presented in Table 39. A significant, low negative relationship existed between perceptions of financial concerns and perceptions of complexity, $r\ (125) = -.25$, $p < .01$. No other significant relationships were found.

Table 39
Correlations between Perceptions of Potential Barriers to eXtension and Complexity

	Complexity		
Potential Barrier	*r*	*p*	Magnitude
Concerns about time	-.16	.08	Low
Concerns about incentives	.08	.40	Negligible
Financial concerns	-.25**	.01	Low
Planning issues	-.08	.38	Negligible
Technology concerns	-.15	.10	Low

Note. Magnitude: $.01 \geq r \geq .09$ = Negligible, $.10 \geq r \geq .29$ = Low, $.30 \geq r \geq .49$ = Moderate, $.50 \geq r \geq .69$ = Substantial, $r \geq .70$ = Very Strong.
**$p < .01$.

Trialability

The correlations between respondents' perceptions of trialability and the potential barriers to the diffusion of eXtension are presented in Table 40. A significant, low negative relationship existed between perceptions of financial concerns and perceptions of trialability, r (125) = -.21, $p < .05$. No other significant relationships were found.

Table 40
Correlations between Perceptions of Potential Barriers to eXtension and Trialability

	Trialability		
Potential Barrier	*r*	*p*	Magnitude
Concerns about time	-.15	.09	Low
Concerns about incentives	-.14	.12	Low
Financial concerns	-.21*	.02	Low
Planning issues	-.12	.20	Low
Technology concerns	-.06	.53	Negligible

Note. Magnitude: .01 ≥ *r* ≥ .09 = Negligible, .10 ≥ *r* ≥ .29 = Low, .30 ≥ *r* ≥ .49 = Moderate, .50 ≥ *r* ≥ .69 = Substantial, *r* ≥ .70 = Very Strong.
*$p < .05$.

Objective Eight

The eighth objective was to determine the appropriateness of including "no knowledge" as a sixth stage in the innovation-decision process. As seen in Table 41, there was a significant difference between the expected and observed frequencies of the respondents' stage in the innovation-decision process ($\chi^2(5, N = 124) = 154.61, p < .01$).

Table 41
Expected and Observed Frequencies for Respondents' Stages in the Innovation-Decision Process

Stage	Expected *f*	Observed *f*	χ^2	*p*
No Knowledge	20.7	39	154.61**	.00
Knowledge	20.7	64		
Persuasion	20.7	4		
Decision	20.7	4		
Implementation	20.7	10		
Confirmation	20.7	3		

Note. **$p < .01$.

Objective Nine

The ninth objective was to determine the predictor variables for stage in the innovation-decision process, based upon agents' perceptions of the characteristics of eXtension, perceptions of the barriers to the diffusion of eXtension, and selected personal characteristics. The dependent variable, stage in the innovation-decision process, had six levels so five discriminant functions were tested. A summary of the significance of the discriminant functions is displayed in Table 42.

The first discriminant function was significant, Wilks' Lambda (5, 75) = .33, χ^2 = 110.48, $p < .05$. The first discriminant function accounted for 39.30% of the variance in the dependent variable. The second discriminant function was not significant, Wilks' Lambda (5, 56) = .50, $\chi^2 = 69.59$, $p > .05$. The second discriminant function accounted for 29.70% of the variance in the dependent variable. The third discriminant function was not significant, Wilks' Lambda (5, 39) = .69, $\chi^2 = 37.29$, $p > .05$. The third discriminant function accounted for 13.60% of the variance in the dependent variable.

The fourth discriminant function was not significant, Wilks' Lambda (5, 24) = 21.23, χ^2 = 24, $p > .05$. The fourth discriminant function accounted for 9.20% of the variance in the dependent variable. The fifth discriminant function was not significant, Wilks' Lambda (5, 11) = .90, $\chi^2 = 10.08$, $p > .05$. The fifth discriminant function accounted for 8.30% of the variance in the dependent variable.

Table 42
Statistical Significance of the Discriminant Functions

Test of Function(s)	Wilks' Lambda	χ^2	df	*p*
1 through 5	.33*	110.48	75	.01
2 through 5	.50	69.59	56	.11
3 through 5	.69	37.29	39	.55
4 through 5	.81	21.23	24	.63
5	.90	10.08	11	.52

Note. *$p < .05$.

A summary of the standardized discriminant function coefficients and structure matrix correlation coefficients for discriminant function one is presented in Table 43. The variables of the most relative importance to the first function were (a) complexity (*b* = .77), (b) technology concerns (*b* = .67), (c) relative advantage (*b* = -.52), and (d) gender (*b* = -.52). The variables most closely correlated with the first function were (a) complexity (*s* = .50), (b) gender (*s* = -.39), (c) trialability (*s* = .31), (d) education (*s* =.30), and (e) technology concerns (*s* = .26). The discriminant function correctly classified 55.90% of the original cases.

Table 43
Summary Data for Discriminant Function One

	Function 1	
Predictor Variable	b^a	s^b
Complexity	.77	.50*
Gender	-.52	-.39*
Trialability	.02	.31*
Education	.40	.30*
Technology concerns	.67	.26*
Age	.05	.21
Role	.09	.18
Concerns about time	.43	.25
Financial concerns	-.34	-.05
Area	-.35	.09
Compatibility	.11	.31
Observability	.37	.20
Concerns about incentives	-.07	.28
Relative advantage	-.52	.17
Planning issues	-.25	.04

Note. [a] = standardized discriminant function coefficients, [b] = pooled within-group correlation coefficients.
*$p < .05$.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

A summary of the study's purpose, objectives, and methodology is presented in this chapter. Conclusions, implications, and recommendations derived from the findings follow the study summary. The chapter concludes with a summary of recommendations for research and a summary of recommendations for future research.

Summary of the Study

The relevancy of Cooperative Extension in the 21st century has repeatedly been called into question (Bull, Cote, Warner & McKinnie, 2004; Crosby et al., 2002; Rasmussen, 1989; Williamson & Smoak, 2005). Extension has been challenged to meet the needs of consumers who demand twenty-four hour access to information (ECOP, 2005). Extension responded to this challenge by developing eXtension, a nationally-based online information network.

eXtension was developed to (a) increase the economic efficiency of the current Extension model by eliminating redundant educational efforts, (b) increase the profitability of Cooperative Extension, (c) raise consumers' awareness of Cooperative Extension, and (d) provide an instantly accessible information resource to increase customer satisfaction (Accenture, 2003). Agent acceptance of eXtension is imperative for the program to be successful (Accenture). Organizationally, Cooperative Extension has traditionally been resistant to change (Washington & Fowler, 2005). A study of the

factors affecting agents' decisions to adopt eXtension is needed to better understand the program's potential as an educational delivery strategy for Cooperative Extension.

Summary of Purpose and Objectives

The purpose of this study was to understand the influence of selected factors on the adoption of eXtension by Texas Cooperative Extension county extension agents. Rogers' (2003) theory of the diffusion of innovations provided the framework for the study. The research objectives were to:

1. Describe selected personal characteristics of Texas Cooperative Extension agents.
2. Determine agents' stage in the innovation-decision process, based upon Li's (2004) adaptation of Rogers' (2003) stages in the innovation-decision process.
3. Determine agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation.
4. Determine agents' perceptions of potential barriers to the adoption of eXtension.
5. Determine if differences exist between agents' perceptions of eXtension based upon selected personal characteristics.
6. Determine if differences exist between agents' perceptions of potential barriers to the adoption of eXtension based upon selected personal characteristics.
7. Describe relationships between agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation and their perceptions of potential barriers to the adoption of eXtension.

8. Determine the appropriateness of including "no knowledge" as a stage in the innovation-decision process.
9. Predict stage in the innovation-decision process based upon agents' perceptions of the characteristics of eXtension, perceptions of the barriers to the diffusion of eXtension, and selected personal characteristics.

Summary of Methodology

The target population for the study included county extension agents working for the Texas Cooperative Extension service in February 2007. Data were collected using an online, researcher-developed questionnaire. The questionnaire was pilot tested to determine face validity and test for reliability. Cronbach's (1951) alpha coefficients were calculated for each internal scale. The reliability levels for the internal scales ranged from $.814 \geq \alpha \leq .911$. These levels were considered acceptable according to the standard set by Gall, Gall, and Borg (2007).

Participants were contacted via e-mail using to the tailored design method prescribed by Dillman (2000). A pre-notice, notice, and four reminders were sent to the participants. A unique password and hyperlink to the questionnaire were included in each contact following the pre-notice. Directions for opting out of the study were provided in the notice and four reminders. A final response rate of 66.90% ($N = 158$) was achieved. The non-response procedure suggested by Lindner, Murphy, and Briers (2001) was used to compare early and late respondents. The two respondent groups were statistically similar with regard to the primary variables, except for observability. Due to

a statistically significant difference between early and late respondents for observability, caution should be used when interpreting results related to this variable.

The Statistical Package for the Social Sciences (SPSS), version 14.0, was used to analyze the data according to the research objectives. There were 125 usable responses. Objectives one through three were analyzed using descriptive methods. Objectives four through seven were analyzed using correlational methods. A non-parametric method, chi-square, was used for objective eight. Objective nine was analyzed using a multivariate correlational method.

The independent variables for the study were (a) primary agent role, (b) county category, (c) education, (d) age, and (e) gender. The dependent variables for the study were (a) stage in the innovation decision process, (b) relative advantage, (c) compatibility, (d) complexity, (e) trialability, (f) observability, (g) concerns about time, (h) concerns about incentives, (i) financial concerns, (j) planning issues, and (k) technology concerns.

Conclusions, Implications, and Recommendations

Objective One: Conclusions

The first objective was to describe selected personal characteristics of the respondents. There were five demographic variables measured: (a) primary agent role, (b) county category, (c) education, (d) age, and (e) gender.

Most of the respondents worked in agriculture or family and consumer sciences, which together accounted for 56.80% (n = 84) of the responses. The fewest respondents

had primary responsibilities in the areas of horticulture (*n*= 8, 6.40%), nutrition education (*n* = 4, 3.20%), and natural resources (*n* = 3, 2.40%). There were no respondents in the area of community development.

Each of Texas' seven county categories was represented by respondents. Most of the respondents worked in category III (*n* = 19, 15.20%), category IV (*n* = 39, 31.20%), or category V (*n* = 19, 15.20%) counties. The fewest number of respondents (*n* = 6, 4.80%) worked in the category VI counties.

The respondents were well-educated. There were no respondents who reported holding a terminal degree at either the high school or associate's level. Approximately 30% (*n* = 38) of respondents had completed a bachelor's degree, while approximately 70% (*n* = 87) of respondents held a graduate degree. Very few of the respondents with a graduate degree had completed a doctoral program.

Respondents tended to be at least thirty years old. Approximately 33% (*n* = 41) of respondents were 30 – 39 years old, 24.00% (*n* = 30) of respondents were 40 – 49 years old, and 28.00% (*n* = 37) were at least 50 years old. Of the 37 respondents who were at least 50 years old, very few were over the age of 60.

Respondents were split almost equally by gender. There were 58 (46.40%) female respondents and 64 (51.20%) male respondents.

Objective One: Implications

At the time of this study, the topics available on eXtension were related to horses, personal finance, and wildlife management (eXtension, n.d.). It follows, then, that current users of eXtension would likely be associated with agriculture, family and consumer sciences, and natural resources. This may explain why the majority of respondents held roles in agriculture or family and consumer science.

Dromgoole and Boleman (2006) found Texas Cooperative Extension county extension agents perceived horticultural topics to have the highest value for distance education, while family and consumer science topics had the lowest anticipated value. Their conclusions indicate horticulture agents may eventually comprise the largest group of eXtension users and family and consumer science agents the smallest. The low number of horticulture agents and high number of family and consumer science agents who chose to participate in this study do not support that hypothesis.

According to a member of the eXtension communication and marketing team, agents with responsibilities in agriculture and horticulture are anticipated to comprise the largest percentage of users (T. Meisenbach, personal communication, September 25, 2006). The current lack of 4-H youth development topics available may decrease the interest in eXtension that was demonstrated by 4-H agents' willingness to participate in this study. Similarly, nutrition education agents may be less inclined to adopt eXtension due to a lack of topics in their interest area.

Rogers (2003) identified the characteristics of socioeconomic status, education, and age as factors which influence the rate of adoption. The findings from the first

objective indicate respondents lived in counties of varying size and wealth. The respondents' residency may influence their perceptions of eXtension. According to Rogers, the more cosmopolite respondents should be more likely to adopt and should have more positive perceptions of eXtension than the localite respondents. Likewise, education is positively associated with adoption (Rogers). Age, however, is negatively associated with adoption (Rogers). Gender may also influence adoption (Emmons, 2003).

Objective One: Recommendations

Future research is recommended to examine the relationships between topics available on eXtension, decision to register as an eXtension user, and primary agent role; and the influence of personal characteristics in the adoption process.

Objective Two: Conclusions

The second objective was to describe respondents according to their stage in the innovation-decision process (no knowledge, knowledge, persuasion, decision, implementation, and confirmation). Most of the respondents were in the early stages of the innovation-decision process. Thirty-nine (31.20%) agents reported they had "never heard of eXtension before reading the description provided in this questionnaire." The majority of agents (n = 64, 51.20%) had knowledge of eXtension, but had not decided their sentiment towards the program. Very few (n = 13, 10.40%) agents were currently using or had used eXtension.

Objective Two: Implications

The findings indicated a widespread lack of knowledge about eXtension. This is particularly troubling, in light of both national and state efforts to increase awareness. This study was timed to coincide with the national web conference hosted by the eXtension administrative team, held February 21, 2007. Pre-notices for the study were purposively sent on February 22, 2007 to follow the national web conference. The conference was open to any agent, in any state across the country. The conference included a demonstration of the eXtension system, a progress report, and group discussion of eXtension issues (eXtension, n.d.).

Efforts to increase awareness of eXtension at the local level included a February 1, 2007, e-mail from the Head of Information Technology (IT) for Texas Cooperative Extension, which explicitly urged agents to register with eXtension (see Appendix B for original text). This was not the first time such an announcement was sent. On November 11, 2006, the Head of IT sent a system-wide message to agents in response to reported concerns about the legitimacy of e-mails being sent from the marketing director of eXtension (see Appendix C for original text). A description of eXtension and two hyperlinks to eXtension were provided in that message. In addition, reference was made to *four* previous occasions agents were sent information about eXtension.

Li (2004) described “no knowledge” as “the stage when potential adopters had no knowledge about the innovation at the very beginning of their adoption

behavior" (p. 170). Thirty-nine agents claimed to have no knowledge of eXtension, yet there were repeated attempts by state and national officials to provide knowledge about the innovation. It seems improbable that all thirty-nine agents were hired following the February 2 e-mail, thus causing their relative newness to the system to prevent familiarity with eXtension. Equally unlikely is the chance that the agents had failed to learn about eXtension because they lacked access to e-mail; the only way respondents could access the questionnaire for this study was by using the hyperlink and password provided to them via e-mail.

One explanation may be the respondents in the "no knowledge" category chose to ignore attempts to educate them about eXtension. Rogers (2003) described this phenomenon as selective exposure. Selective exposure is "the tendency to attend to communication messages that are consistent with the individual's existing attitudes and beliefs" (p. 171). Rogers further explained "Individuals consciously or unconsciously avoid messages that are in conflict with their existing predispositions" (p. 171). It is possible agents disregarded communication messages about eXtension because they did not perceive eXtension to be consistent with their attitudes and beliefs about Cooperative Extension. This may continue to be a problem in the future.

An innovation's consistency with a potential adopter's attitudes and beliefs is important in the knowledge stage (Rogers, 2003). During this time period, individuals begin to think about the relevancy of the innovation to their situation. Individuals will not progress beyond the knowledge stage in the innovation-decision process if they believe the innovation is irrelevant or if they lack "sufficient knowledge" to proceed to

the persuasion stage (Rogers, p. 174). The large number (n = 64) of respondents in the knowledge stage implies the existence of at least one of these two obstacles to progression.

There was a low number of respondents in the persuasion (n = 4) and decision (n = 4) stages versus the implementation (n = 10) stage. This indicates potential adopters moved relatively quickly through the persuasion and decision stages. It may be assumed the respondents in the implementation stage had formed favorable perceptions of eXtension in the preceding stages. Those with negative perceptions about eXtension would have rejected the innovation in the decision stage and would not have reached implementation (Rogers, 2003). It is unknown whether the respondents in the decision stage for this study had chosen to adopt but had not yet acted, or whether they chose to reject eXtension. However, the number of respondents in the implementation stage may be interpreted as a positive sign, as it exceeded the number of respondents in the decision stage.

Objective Two: Recommendations

Recommendations for practice, based on Rogers' (2003) theory of the diffusion of innovations, are to (a) develop a marketing plan which better communicates how eXtension addresses agents' needs, (b) provide more information about how to use eXtension properly, (c) utilize peer networking to promote eXtension rather than mass communications, and (d) provide positive reinforcement for agents who have chosen to

adopt eXtension. Implementing these recommendations would be expected to aid agents' progression through the stages in the innovation-decision process.

Research recommendations are to investigate (a) factors related to the potential occurrence of selective exposure, (b) factors related to the high number of respondents in the knowledge stage, (c) factors influencing potential adopters' decisions to reject eXtension, (d) factors influencing agents' decision to adopt eXtension, and (e) adopters' perceptions of eXtension.

Objective Three: Conclusions

The third objective was to describe agents' perceptions of eXtension based upon Rogers' (2003) characteristics of an innovation (relative advantage, compatibility, observability, complexity, and trialability). Respondents had positive perceptions of relative advantage, compatibility, complexity and trialability as those characteristics related to eXtension. They had the most positive perceptions of complexity. They did not perceive eXtension to have a high degree of observability.

Objective Three: Implications

Rogers (2003) identified subdimensions of relative advantage such as a decrease in discomfort and a saving of time and effort. Respondents somewhat agreed eXtension would make their jobs easier. They indicated eXtension might increase the accessibility of Cooperative Extension programming, which is consistent with one of the goals of the program (Accenture, 2003).

However, eXtension was not perceived to save time and effort for agents. They somewhat disagreed with the statements "eXtension provides agents with more time to serve traditional clientele" ($M = 3.26$, $SD = 1.23$) and "I envision spending less time answering routine questions by referring clientele to eXtension" ($M = 2.87$, $SD = 1.28$). eXtension's failure to save time and effort represents a serious drawback of the system, as previous research has found agents struggle with the issue of time management (Harder & Wingenbach; Place, Jacob, Summerhill, & Arrington, 2000). The rate of adoption may be slowed if agents perceive this to decrease eXtension's relative advantage (Rogers, 2003).

Rogers (2003) said innovations which are compatible with the ideas, values, beliefs, and experiences of potential adopters will have faster rates of adoption. Previous research identified core values of Cooperative Extension, including honesty and integrity, credibility with clientele, and high standards for educational programming (e.g., Safrit, Conklin, & Jones, 2003; Seevers, 1999). Respondents indicated they perceived eXtension was somewhat compatible with those values. They agreed eXtension was supportive of Cooperative Extension's mission. The rate of adoption for eXtension should be faster due to eXtension's compatibility with agents' beliefs and values.

Complex innovations have lower rates of adoption (Rogers, 2003). eXtension was not perceived to be complex by agents despite previous research which found agents needed to strengthen their computer skills (Albright, 2000; Courson, 1999). The items in this study referred directly to the use of e-mail and the Internet, which may account for

the disparity. However, the findings from this study support Gregg and Irani's (2004) conclusion that extension agents are increasingly using technology in their daily activities. eXtension should not be inhibited by agents' perceptions of its complexity.

Innovations which can be tested on a trial basis have improved rates of adoption (Rogers, 2003). Respondents had positive perceptions of eXtension's trialability. This was unexpected, given the necessity to obtain a username and password in order to access eXtension materials. The inherent trialability of eXtension is limited by such a requirement, as it forces the user to make a commitment before experimenting with the innovation. It is possible that few agents were interested enough to visit the eXtension Web site and consequently were unaware of the username requirement. That may be why the respondents' perceptions of trialability were positive. Or, agents may have had enough familiarity with their own state-based, online Extension resource to substitute that experience in lieu of hands-on experience with eXtension. The respondents' positive perceptions of eXtension's trialability should relate positively with its rate of adoption.

The final characteristic, observability, was negatively perceived by respondents. It should be noted there was a significant difference between early and late respondents, so the findings related to this characteristic should be limited to the sample population. In addition, there were only three items measuring the respondents' perception of observability but the limited number of items should not have affected the findings. The *a priori* test for reliability resulted in a Cronbach's alpha coefficient of .826 and an *ex post facto* test resulted in a Cronbach's alpha coefficient of .881.

Rogers (2003) said observability is positively related to an innovation's rate of adoption. The negative perceptions of eXtension's observability would be expected to inhibit the rate of adoption. Agents reported (a) it would be somewhat difficult to identify people involved in eXtension, (b) the official eXtension website was not well-publicized, and (c) eXtension was not highly visible. These perceptions should be considered a threat to the diffusion of eXtension.

Objective Three: Recommendations

The following recommendations are intended to increase agent's perceptions of relative advantage, trialability, and observability, respectively. They are to: (a) train agents how to incorporate eXtension into their daily job responsibilities in a way which will help them save time and effort, (b) provide agents with temporary guest access to eXtension without requiring registration, and (c) improve the marketing efforts for eXtension.

Future studies are recommended to (a) determine the primary needs of agents, (b) determine factors related to agents' perceptions of eXtension's trialability, and (c) determine which methods are most effective for increasing the visibility of eXtension.

Objective Four: Conclusions

The fourth objective was to describe respondents' perceptions of the potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension. Respondents somewhat

agreed that each potential barrier was, in fact, a barrier. They had the most concerns about time. Technology concerns were least perceived as a barrier.

Objective Four: Implications

The identified barriers to eXtension were similar to those found in the literature. Concerns about incentives, financial concerns, and technology concerns were identified as recurring barriers in Maguire's (2005) synthesis of distance education literature. Respondents somewhat agreed there was a lack of eXtension incentives related to (a) their performance evaluation, (b) their salary, and (c) county recognition. Respondents somewhat agreed the cost of purchasing the computer technologies necessary to use eXtension was a concern. The loss of face-to-face contact with clientele was the most agreed upon technology concern. Previous research found agricultural education faculty had a similar concern about the loss of interaction with students in distance education courses (Murphrey & Dooley, 2002; Nelson & Thompson, 2005).

Agents most agreed a lack of opportunities to learn about eXtension was a barrier related to planning issues. This finding is consistent with the respondents' agreement that there was a lack of time to learn how to incorporate eXtension into their jobs. In addition, the lack of training programs available for learning how to use eXtension was a technology concern. Together, these concerns establish a need for eXtension trainings.

Perhaps the most critical of the identified barriers is the concern about time. The respondents' concerns about the time necessary to use eXtension were consistent with the previous research which identified time as a barrier to the diffusion of distance

education in higher education (Berg, Muilenberg, Van Haneghan, 2002; Curbelo-Ruiz, 2002; Haber, 2006; Murphy & Terry, 1998; Nelson & Thompson, 2005; Roberts & Dyer, 2005). Previous research has found agents experienced stress related to demands on their time (Ensle, 2005; Place, Jacob, Summerhill, & Arrington, 2000). Based on the findings of this study, it could be reasonably expected that agents continue to feel they do not have enough time to accomplish the activities which need to be done.

The respondents in this study indicated they neither had the time to learn how to incorporate eXtension into their daily activities, nor the opportunity to do so. If agents felt they lacked the time to learn about eXtension, it is questionable whether agents would have attended training even if the opportunity existed. This is an issue which needs further attention. Also, the respondents indicated they had a lack of time to meet the needs of traditional eXtension clientele; agents may see the time required to serve eXtension clientele as further impairing their ability to work with traditional clientele. These concerns present a challenge for overcoming this barrier.

Objective Four: Recommendations

The following recommendations are intended to decrease or eliminate agents' concerns about time and incentives, financial concerns, and planning issues, respectively. Practical recommendations for decreasing or eliminating barriers to eXtension are to (a) incorporate lessons on time management into eXtension trainings, (b) incorporate adoption of eXtension into employee performance evaluations, (c)

market eXtension to county commissioners, (d) provide need-based grant support for computer technologies, and (e) provide opportunities to learn how to use eXtension.

It is recommended that future research determine which delivery strategy (e.g., face-to-face, online, handbook) is most preferred by agents for eXtension trainings. Research should be conducted to determine if relationships exist between training delivery strategies, learning, and agents' decisions to adopt eXtension. Related recommendations for future research include the identification and evaluation of online tools which may increase agent-to-clientele interaction in the eXtension environment. The incorporation of such tools into eXtension trainings may help alleviate the agents' reported concerns about a loss of face-to-face contact with clientele.

Concerns about time are not only linked to the adoption of eXtension, but to the role of an Extension agent. Future research should examine (a) the factors related to agents' concerns about time with regard to eXtension, (b) the factors related to concerns about a lack of time to serve traditional clientele, and (c) strategies for decreasing time-related job stress. The first recommendation for research may provide research-based information which can be used to develop strategies to decrease agents' perceptions of time as a barrier to the adoption of eXtension. The second recommendation may provide a broader understanding of agents' motivation and/or ability to serve eXtension clientele, while the third recommendation may provide an understanding of effective strategies for decreasing time-related job stress.

Objective Five: Conclusions

The fifth objective was to determine if differences existed between agents' perceptions of the characteristics of eXtension (relative advantage, compatibility, observability, complexity, and trialability) based upon selected personal characteristics (primary agent role, county category, education, age, and gender). Perceptions of eXtension did not significantly differ by county category, education, or age.

The respondents did significantly differ in their perceptions of eXtension by primary agent role. 4-H agents tended to agree that eXtension did not seem complex and were different from the horticulture agents, who somewhat agreed. Family and consumer science agents tended to agree eXtension did not seem complex, and were different from the agriculture and horticulture agents, who somewhat agreed. Perceptions of the remaining four characteristics (relative advantage, compatibility, observability, and trialability) were not significantly different by primary agent role.

Respondents significantly differed in their perceptions of eXtension by gender. Females agreed eXtension was compatibile with their values, beliefs, or experiences, while males somewhat agreed. Perceptions of the remaining four characteristics (relative advantage, observability, complexity, and trialability) were not significantly different by gender.

Objective Five: Implications

The personal characteristics of county category, education, and age were not related to perceptions of eXtension. According to Rogers (2003), age is not associated

with early adoption. This study supports that conclusion. Rogers stated potential adopters with higher socioeconomic status and higher levels of education are more likely to be early adopters. This may be interpreted to mean individuals possessing these traits would have more favorable perceptions of the characteristics of an innovation, based upon Rogers' theory that favorable perceptions of an innovation's characteristics lead to a faster rate of adoption. Therefore, county category (which is based upon a combination of population and revenue) and education would have been expected to positively relate to perceptions of eXtension. This study does not support Rogers' theory with regard to socioeconomic status and education.

Primary agent role related to respondents' perceptions of the complexity of eXtension. 4-H and family and consumer sciences agents were more likely to agree they were comfortable using the tools associated with eXtension than agriculture or horticulture agents. Nutrition education and natural resources agents indicated perceptions similar to the 4-H and family and consumer sciences agents. The differences in the perceived complexity of eXtension may be related to the unique demands of each primary agent role.

Gender was related to respondents' perceptions of the compatibility of eXtension. Females were more likely to agree eXtension was compatible with their values, beliefs, and experiences than males. Unlike Seevers' (1999) conclusion that there was no difference in Cooperative Extension values by gender, this finding suggests males and females may have differing values and beliefs as they pertain to eXtension. According to Rogers (2003), a person's experiences also contribute to perceptions of

compatibility. It is possible male and female agents have different job experiences due to their gender (e.g. job roles, how clientele interact with them, family responsibilities), which may account for the dissimilar perceptions of compatibility.

Objective Five: Recommendations

Primary agent role should be taken into consideration when developing eXtension trainings for agents, with regard to perceived complexity. Based on the findings from this study, additional technical assistance should be planned for horticulture and agriculture agents.

Future research is recommended to understand the influence of primary agent role on perceptions of complexity. The influence of gender on perceptions of compatibility should be studied, as well. Future research should determine if relationships exist between gender, organizational values, and job-related experiences.

Objective Six: Conclusions

The sixth objective was to determine if significant differences existed between agents' perceptions of potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the adoption of eXtension based upon selected personal characteristics (primary agent role, county category, education, age, and gender). There were no significant differences in perceptions of potential barriers based upon primary agent role, county category, age, or gender.

There was a significant difference in perceptions of concerns about incentives based upon education. Respondents who had completed a master's degree were more likely to somewhat agree a lack of incentives was a barrier to the adoption of eXtension than respondents with a bachelor's degree. Education did not affect perceptions of the other four barriers (concerns about time, financial concerns, planning issues, and technology concerns).

Objective Six: Implications

The personal characteristics of primary agent role, county category, age, and gender were not related to agents' perceptions of barriers to eXtension. The findings are dissimilar to Schifter's (2000) identification of age as a significant demographic variable related to faculty involvement with distance education. The findings are partially consistent with Li's (2004) study, which found significant differences in perceptions of potential barriers by professional area and gender, but not by age or level of education.

Level of education was related to agents' concerns about incentives. A lack of adopter incentives decreases an innovation's perceived relative advantage (Rogers, 2003). Agents with a graduate degree are more likely to be concerned about incentives than agents with a bachelor's degree. Earning a graduate degree may result in a greater sense of entitlement, due to the investments of time and money required to attend graduate school. If so, those agents may have less favorable perceptions of innovations which fail to reward their scholastic efforts with incentives.

However, Rockwell, Schauer, Fritz and Marx (1999) found salary incentives were not a significant barrier to the diffusion of distance education. Another potential explanation was provided by Li's (2004) study, which concluded faculty with higher levels of education are *less* likely to be in the later stages of the innovation-decision process. This may be indicative of a greater sense of skepticism on the part of highly educated faculty members. Rather than adopting more quickly, individuals with advanced degrees may require additional incentives to move beyond the persuasion stage in the innovation-decision process.

Objective Six: Recommendations

More incentives should be offered to increase the perceived relative advantage of eXtension. Specifically, the use of eXtension should be incorporated into performance evaluations at the county and state levels. County commissioners should be educated about eXtension and encouraged to recognize the agents who use eXtension, as eXtension is designed to provide an educational service to their constituents. The final recommendation is to provide a salary incentive to increase perceptions of relative advantage. Such an incentive may need to be positively related to educational attainment to appeal to agents with graduate degrees. Increasing agents' perceptions of relative advantage will increase the rate of adoption (Rogers, 2003). The anticipated benefits associated with eXtension may offset the economic investment required for salary incentives.

Future research is recommended to determine why education is related to differing perceptions of concerns about incentives as a barrier to the adoption of eXtension. Research is recommended to determine the types of incentives most preferred by agents. If increased incentives are offered, future research should examine the effect of those increased incentives on agents' perceptions of the relative advantage of eXtension.

Objective Seven: Conclusions

The seventh objective was to describe the relationships between perceptions of eXtension (relative advantage, compatibility, observability, complexity, and trialability) and potential barriers (concerns about time, concerns about incentives, financial concerns, planning issues, and technology concerns) to the diffusion of eXtension. There were no significant relationships between perceptions of observability and any potential barrier.

There were significant, low negative relationships between perceptions of relative advantage and two potential barriers: concerns about time and financial concerns. There were no other significant relationships between relative advantage and the three remaining potential barriers (concerns about incentives, planning issues, and technology concerns).

There were significant, low negative relationships between perceptions of compatibility and two potential barriers: financial concerns and planning issues. There were no other significant relationships between compatibility and the three remaining

potential barriers (concerns about time, concerns about incentives, and technology concerns).

There was a significant, low negative relationship between perceptions of complexity and perceptions of financial concerns. There were no other significant relationships between complexity and the four remaining barriers (concerns about time, concerns about incentives, planning issues, and technology concerns).

There was a significant, low negative relationship between perceptions of trialability and perceptions of financial concerns. There were no other significant relationships between trialability and the four remaining barriers (concerns about time, concerns about incentives, planning issues, and technology concerns).

Objective Seven: Implications

Perceptions of observability were not related to perceptions of potential barriers to eXtension. This is consistent with Li's (2004) conclusion that perceptions of observability were not related to how faculty perceived potential barriers to web-based distance education. Increasing eXtension's observability would not be expected to eliminate perceptions of potential barriers.

Perceptions of relative advantage were negatively related to concerns about time and financial concerns. This is not consistent with the findings of Li (2004), who concluded the perceived relative advantage of web-based distance education was negatively related to program credibility and planning issues. Decreasing or eliminating

concerns about time and financial concerns would be expected to increase the perceived relative advantage of eXtension.

Perceptions of compatibility were negatively related to financial concerns and planning issues. Li (2004) found planning issues were related to the perceived compatibility of web-based distance education. Decreasing or eliminating financial concerns and planning issues would be expected to increase the perceived compatibility of eXtension.

Perceptions of complexity were negatively related to financial concerns. This conclusion is similar to the findings of Li (2004), who concluded financial concerns, planning issues and concerns about time (in addition to three barriers not included in this study) were related to complexity. Decreasing or eliminating financial concerns and planning issues would be expected to increase the perceived complexity of eXtension.

Perceptions of trialability were negatively related to financial concerns. Li (2004) did not find a relationship existed between financial concerns and perceptions of trialability. Decreasing or eliminating financial concerns would be expected to increase the perceived trialability of eXtension.

Schifter (2002) said the rate of adoption increases when barriers are eliminated. Financial concerns were related to perceptions of four out of five of the characteristics of eXtension. Decreasing or eliminating financial concerns would be expected to have the most significant impact on improving perceptions of eXtension and its rate of adoption.

As mentioned in the preceding paragraphs, the findings for this objective differed from Li's (2004) findings in several ways. Rogers' (2003) description of the diffusion

process—an innovation diffuses through a *social system* over time—provides an explanation for the differences between the two studies. Although eXtension and web-based distance education are similar innovations, the social systems associated with Chinese faculty members and Texas Cooperative Extension county agents are different. Therefore, some discrepancies in perceptions were expected. It is for this reason that diffusion research must focus not only on the innovation itself, but the social system within which the diffusion is expected to occur.

Objective Seven: Recommendations

Recommendations for practice are to decrease or eliminate barriers related to (a) concerns about time, (b) planning issues, and (c) financial concerns, in order to increase perceptions of four of the five characteristics of eXtension.

Research is recommended to understand the influence of (a) concerns about time and financial concerns on perceived relative advantage, (b) financial concerns and planning issues on perceived compatibility, (c) financial concerns on perceived complexity, and (d) financial concerns on perceived trialability. Future studies should examine how the relationships between perceptions of eXtension and the barriers to eXtension differ according to social system. This study should be replicated in states other than Texas to better understand the factors related to the diffusion of eXtension throughout the entire Cooperative Extension system.

Objective Eight: Conclusions

The eighth objective was to determine the appropriateness of including "no knowledge" as a sixth stage in the innovation-decision process. There were significantly more respondents who selected "no knowledge" than would have been expected by random chance.

Objective Eight: Implications

Rogers (2003) included only five stages in the innovation-decision process: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. His theory failed to include potential adopters who had not learned about the innovation yet. Li (2004) was the first researcher to include "no knowledge" as a stage. As very few respondents indicated they had "no knowledge" of web-based distance education in Li's study, further evidence was needed to support the inclusion of the sixth stage in the innovation-decision process. The number of respondents who selected "no knowledge" in this study exceeded the number anticipated by random chance, implying it is appropriate to expand Rogers' model to include the "no knowledge" stage.

Objective Eight: Recommendations

Future diffusion research should include "no knowledge" as a sixth stage in the innovation-decision process, as originally suggested by Li (2004). This study attempted to provide a response option which clearly defined what it meant to have no knowledge. However, there is no way to verify if those respondents who selected "no knowledge"

were truly ignorant of eXtension, or if they lacked the confidence necessary to select "knowledge." Research is recommended to determine the level of knowledge which must be obtained for a respondent to cross the threshold between the no knowledge stage and the knowledge stage. Such research will contribute to the knowledge base of diffusion research.

Objective Nine: Conclusions

The ninth objective was to determine the predictor variables for stage in the innovation-decision process, based upon agents' perceptions of the characteristics of eXtension, perceptions of the barriers to the diffusion of eXtension, and selected personal characteristics. The variables that significantly correlated with stage in the innovation-decision process were (a) complexity, (b) gender, (c) trialability, (d) education, and (e) technology concerns. The first discriminant function accounted for 39.30% of the variance in the dependent variable and correctly classified 55.90% of the original cases.

Objective Nine: Implications

There were two characteristics of eXtension (complexity and trialability), one barrier to eXtension (technology concerns), and two personal characteristics (education and gender) which were significantly correlated with stage in the innovation-decision process. It is interesting to note relative advantage and compatibility were not found to be predictor variables, although Rogers (2003) said they were the most influential

characteristics in determining rate of adoption. The literature supports the inclusion of education as a predictor variable (Rogers, 2003; Li, 2004). Li did not find gender or technology concerns were correlated with stage in the innovation-decision process.

There was 60.7% of the variance which was not accounted for by the discriminant function. Nearly half of the original cases could not be correctly identified by the discriminant function. A need exists for a model which accounts for a higher percentage of the variance and correctly classifies a greater number of original cases.

Objective Nine: Recommendations

Future research is needed to develop a more accurate model which can be used to predict stage in the innovation-decision process.

Summary of Recommendations for Practice

Recommendations to increase the adoption and diffusion of eXtension amongst Texas Cooperative Extension county extension agents are:

1. To encourage agents' progression through the stages in the innovation-decision process by developing a marketing plan which highlights how eXtension addresses agents' needs,
2. To encourage agents' progression through the stages in the innovation-decision process by providing agents with more information about how to use eXtension properly;

3. To encourage agents' progression through the stages in the innovation-decision process by utilizing peer networking to promote eXtension rather than mass communications,
4. To encourage agents' progression through the stages in the innovation-decision process by providing positive reinforcement for agents who have chosen to adopt eXtension,
5. To increase perceptions of relative advantage by training agents how to incorporate eXtension into their job responsibilities in a way which will help them save time and effort,
6. To increase perceptions of trialability by providing agents with temporary guest access to eXtension without requiring registration,
7. To increase perceptions of observability by improving marketing efforts to increase the visibility of eXtension,
8. To decrease or eliminate concerns about time by incorporating lessons on time management into eXtension trainings,
9. To decrease or eliminate concerns about incentives by incorporating adoption of eXtension into employee performance evaluations,
10. To decrease or eliminate concerns about incentives by marketing eXtension to county commissioners,
11. To decrease or eliminate financial concerns by providing need-based grant support for computer technologies,

12. To decrease or eliminate planning issues by providing agents with opportunities to learn how to use eXtension,
13. To incorporate lessons on time management into eXtension trainings,
14. To provide additional technical assistance for horticulture and agriculture agents during eXtension trainings,
15. To offer more incentives to increase the perceived relative advantage of eXtension,
16. To increase incentives by incorporating the use of eXtension into performance evaluations at the county and state levels,
17. To increase incentives by educating county commissioners about eXtension,
18. To increase incentives by encouraging county commissioners to recognize the agents who use eXtension,
19. To increase incentives by providing salary raises for eXtension users,
20. To increase perceptions of four of the five characteristics of eXtension by decreasing or eliminating the following barriers: (a) concerns about time, (b) planning issues, and (c) financial concerns.

Summary of Recommendations for Future Research

This study should be replicated within each state, due to the uniqueness of the social systems within each state Cooperative Extension program. Recommendations for future research related to the adoption and diffusion of eXtension amongst Texas Cooperative Extension county extension agents are:

1. To examine the relationships between the topics available on eXtension, agents' decision to register as an eXtension user, and primary agent role,
2. To examine the influence of personal characteristics on the adoption process,
3. To examine factors related to the potential occurrence of selective exposure,
4. To examine factors related to the high number of respondents in the knowledge stage,
5. To examine the primary needs of agents,
6. To examine the factors influencing potential adopters' decisions to reject eXtension,
7. To examine factors influencing agents' decisions to adopt eXtension,
8. To determine the primary needs of agents,
9. To examine adopters' perceptions of eXtension,
10. To determine the factors related to agents' perceptions of eXtension's trialability,
11. To determine which methods are most effective for increasing the visibility of eXtension,
12. To determine which delivery strategy is most preferred by agents for eXtension trainings,
13. To determine if relationships exist between training delivery strategies, learning, and agents' decisions to adopt eXtension,
14. To identify and evaluate online tools which may increase agent-to-clientele interaction in the eXtension environment,

15. To examine the factors related to agents' concerns about time with regard to eXtension so strategies may be developed to decrease agents' perceptions of time as a barrier to the adoption of eXtension,
16. To examine the factors related to concerns about a lack of time to serve traditional clientele in order to have a broader understanding of agents' motivation and/or ability to serve eXtension clientele,
17. To examine strategies for decreasing time-related job stress,
18. To understand the influence of primary agent role on perceptions of complexity,
19. To understand the influence of gender on perceptions of compatibility,
20. To determine if relationships exist between gender, organizational values, and job-related experiences,
21. To understand the influence of education on concerns about incentives,
22. To determine the types of incentives most preferred by agents,
23. To examine the effect of increased incentives on agents' perceptions of the relative advantage of eXtension,
24. To understand the influence of concerns about time and financial concerns on perceived relative advantage,
25. To understand the influence of financial concerns and planning issues on perceived compatibility,
26. To understand the influence of financial concerns on perceived complexity,
27. To understand the influence of financial concerns on perceived trialability,

28. To examine how the relationships between perceptions of eXtension and the barriers to eXtension differ according to social system,
29. To include “no knowledge” as a sixth stage in the innovation-decision process,
30. To determine the level of knowledge which must be obtained for a respondent to cross the threshold between the no knowledge stage and the knowledge stage, and
31. To develop a more accurate model that can be used to predict stage in the innovation-decision process.

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APPENDIX A

Agents' Perceptions of eXtension

Thank you for your interest in this survey. All data collection has ceased. If you would like a similar survey posted to this portal, please contact us.

The purpose of this study is to determine Texas Cooperative Extension County Extension Agents' perceptions of eXtension.

Directions:
There are four sections in this questionnaire. Please read the directions for **each** section carefully.

SECTION I: COMMUNICATION AND COOPERATIVE EXTENSION
Please indicate your answers for the statements described below by clicking the radio button on the right side of your answer.

1. Rate the ability of Cooperative Extension to meet the informational needs of the general public in the 21st century using traditional delivery methods (e.g. hard copy fact sheets, workshops, phone calls).

- Poor ○
- Adequate ○
- Excellent ○

2. An online information resource called eXtension (pronounced e-extension) has been developed for Cooperative Extension agents and clientele. eXtension will fully launch in 2007, although some content is currently available. Please indicate your level of involvement with eXtension:

- I had never heard of eXtension before reading the description provided in this questionnaire. ○
- I understand its purposes and features, but have not decided whether or not I like or dislike eXtension. ○
- I have decided that I like or dislike eXtension. ○
- I have decided that I will or will not use eXtension. ○
- I am using eXtension. ○
- I have used eXtension long enough to evaluate whether or not eXtension will be part of my future in Extension. ○

SECTION II: CHARACTERISTICS IMPACTING THE DIFFUSION OF eXtension
Below is a list of characteristics that may impact the diffusion of eXtension. Please read each item carefully before indicating your answer by clicking the appropriate radio button.

Use the following scale to indicate your response.

1 = Strongly Disagree

2 = Disagree
3 = Somewhat Disagree
4 = Somewhat Agree
5 = Agree
6 = Strongly Agree

Relative Advantage	1	2	3	4	5	6
Cooperative Extension will become more popular due to the addition of eXtension.	○	○	○	○	○	○
eXtension increases the accessibility of Cooperative Extension programming.	○	○	○	○	○	○
eXtension creates more funding opportunities for Cooperative Extension.	○	○	○	○	○	○
I envision spending less time answering routine questions by referring clientele to eXtension.	○	○	○	○	○	○
eXtension provides agents with more time to serve traditional clientele.	○	○	○	○	○	○
I envision finding information faster by using eXtension as a resource.	○	○	○	○	○	○
eXtension is a cost-savings effort that prevents duplication of efforts.	○	○	○	○	○	○
Using eXtension as a resource will make doing my job easier.	○	○	○	○	○	○
Compatibility	**1**	**2**	**3**	**4**	**5**	**6**
eXtension supports the mission of Cooperative Extension.	○	○	○	○	○	○
Online programs are an acceptable way for Cooperative Extension to deliver programs.	○	○	○	○	○	○
eXtension will allow me to deliver programs based upon the needs of clientele.	○	○	○	○	○	○
eXtension provides research-based information to the public.	○	○	○	○	○	○
eXtension can be used to cultivate sustainable relationships in the community.	○	○	○	○	○	○
My vision for the future of Cooperative Extension includes eXtension.	○	○	○	○	○	○
Complexity	**1**	**2**	**3**	**4**	**5**	**6**
eXtension seems user-friendly.	○	○	○	○	○	○
Using eXtension seems simple.	○	○	○	○	○	○
Using online resources to access information is easy for me.	○	○	○	○	○	○
I am good at navigating websites to find the information I need.	○	○	○	○	○	○
It will be easy for me to download information from eXtension to my computer.	○	○	○	○	○	○
E-mail is a tool that I am comfortable using.	○	○	○	○	○	○
Trialability	**1**	**2**	**3**	**4**	**5**	**6**
I can select the features of eXtension that I want to use.	○	○	○	○	○	○

I can define the terms of my use of eXtension, if any.	○ ○ ○ ○ ○ ○
I can test key features of eXtension with no obligation for continued or future use.	○ ○ ○ ○ ○ ○
I can use eXtension without committing to develop new materials for it.	○ ○ ○ ○ ○ ○

Observability	**1**	**2**	**3**	**4**	**5**	**6**
The official eXtension website is well-publicized.	○	○	○	○	○	○
eXtension is a highly visible program.	○	○	○	○	○	○
Agents will easily be able to identify people who are involved in eXtension.	○	○	○	○	○	○

SECTION III: POSSIBLE BARRIERS TO THE DIFFUSION OF eXtension

Below is a list of possible barriers to the diffusion of eXtension amongst Extension agents. Please read each item carefully before indicating your perception of each possible barrier by clicking the appropriate radio button.

Use the following scale to indicate your response.

1 = Strongly Disagree
2 = Disagree
3 = Somewhat Disagree
4 = Somewhat Agree
5 = Agree
6 = Strongly Agree

Concerns about time	**1**	**2**	**3**	**4**	**5**	**6**
Lack of time available to access eXtension materials.	○	○	○	○	○	○
Lack of time available to respond to online requests for information.	○	○	○	○	○	○
Lack of time to meet the needs of traditional Extension clientele.	○	○	○	○	○	○
Lack of time to learn how to incorporate eXtension into typical job responsibilities.	○	○	○	○	○	○
Lack of time available to serach for information on eXtension.	○	○	○	○	○	○

Concerns about incentives	**1**	**2**	**3**	**4**	**5**	**6**
Lack of monetary compensation for developing eXtension resources.	○	○	○	○	○	○
Lack of county/parish recognition for using eXtension.	○	○	○	○	○	○
Lack of correlation between agent use of eXtension and performance evaluation.	○	○	○	○	○	○
Lack of awards for involvement with eXtension.	○	○	○	○	○	○
Lack of salary increase for using eXtension.	○	○	○	○	○	○
Lack of support from local administrators.	○	○	○	○	○	○

Lack of support from state administrators.	○ ○ ○ ○ ○ ○
Financial concerns	**1 2 3 4 5 6**
My state Extension program does not have enough money to support eXtension.	○ ○ ○ ○ ○ ○
Lack of financial resources to support the necessary computer technologies.	○ ○ ○ ○ ○ ○
Concerns about sharing revenue from eXtension with multiple partnering institutions.	○ ○ ○ ○ ○ ○
Lack of financial resources to promote eXtension locally.	○ ○ ○ ○ ○ ○
Cost of purchasing the necessary computer technologies.	○ ○ ○ ○ ○ ○
Planning issues	**1 2 3 4 5 6**
Lack of identified need (perceived or real) for eXtension.	○ ○ ○ ○ ○ ○
Lack of shared vision for the role of eXtension with traditional Extension structure.	○ ○ ○ ○ ○ ○
Lack of strategic planning for eXtension.	○ ○ ○ ○ ○ ○
Lack of coordination between participating eXtension partners.	○ ○ ○ ○ ○ ○
Lack of planned opportunities for agents to learn about eXtension.	○ ○ ○ ○ ○ ○
Technology concerns	**1 2 3 4 5 6**
Lack of agent access to computers.	○ ○ ○ ○ ○ ○
Concern about loss of control of Extension information at the local level.	○ ○ ○ ○ ○ ○
Lack of agent access to adequate Internet connection speeds.	○ ○ ○ ○ ○ ○
Concern for legal issues (e.g., computer crime, hackers, software piracy, copyright).	○ ○ ○ ○ ○ ○
Concern that eXtension will be used to replace local agent positions.	○ ○ ○ ○ ○ ○
Lack of technical support.	○ ○ ○ ○ ○ ○
Concern about intellectual property rights.	○ ○ ○ ○ ○ ○
Lack of training programs to learn how to use eXtension.	○ ○ ○ ○ ○ ○
Concern about loss of face-to-face contact with clientele.	○ ○ ○ ○ ○ ○

SECTION IV: PERSONAL CHARACTERISTICS

Please indicate your responses to the following questions by clicking the appropriate radio button.

1. I am a resident of:

U.S. State of Residency (two letter abbreviation)

2. My primary role (greatest percentage of Extension responsibilites) as an agent is in:

4-H/Youth Development ○
Agriculture ○
Community Development ○
Family & Consumer Sciences ○
Horticulture ○
Natural Resources ○
Nutrition Education ○

3. My Extension office is located in this type of county:

Category I ○
Category II ○
Category III ○
Category IV ○
Category V ○
Category VI ○
Category VII ○

4. The highest degree I have earned is a(n):

High School ○
Associate's ○
Bachelor's ○
Master's ○
Ph.D. ○

5. I am:

Female ○
Male ○

6. Please select the option that includes your age (in years):td>

18 - 29 ○
30 - 39 ○
40 - 49 ○
50 - 59 ○
60+ ○

7. In the space below, type any additional comments you wish to share.

THANK YOU FOR YOUR TIME AND HELP!

Thank you for your interest in this survey. All data collection has ceased.

APPENDIX B

>>> Lawrence Lippke 2/1/2007 1:09:28 pm >>>
TO: Texas Cooperative Extension Faculty/Staff

Here (below) is the latest from eXtension. I also encourage your signing up for an eXtension ID (http://people.extension.org) as mentioned below, and start looking through some of the information currently available from eXtension. Currently, information about horses, financial security, and wildlife damage management is available from eXtension's public website at http://www.extension.org. If you already have an eXtension ID, you can use it when accessing that public website as well, but it is not required.

Second, the eXtension FAQ database (http://faq.extension.org) currently has some 27,000 questions and answers in various stages of review and publication. Using your eXtension ID, you may search through those questions and answers for information that may be helpful to your Extension programs. This current database is not sufficiently comprehensive for everything Extension does, but there is certainly a lot of information about the three "public" topics mentioned above, as well as FAQs related to horticulture and fire ants. If you feel you have expertise in any particular area, you can even sign up to be able to review and edit the answers you see there.

Finally, you can view information about the active Communities of Practice (http://cop.extension.org), and you are invited to join and contribute to them as well. eXtension, while a long rumored and awaited project, is now up and running, albeit far from complete or comprehensive.

\Larry

[Texas Cooperative Extension logo]

Dr. Lawrence A. Lippke
Head, Information Technology
Texas Cooperative Extension
103 TAES Annex Building
2468 TAMU
College Station, TX 77843-2468
v: 979.845.9689; f: 979.845.0829; e: lalippke@tamu.edu
IM: llippke@chat.extension.org

>>> On 02/01/07 at 01:13, "Terry Meisenbach" <Terry.Meisenbach@extension.org> wrote:
WELCOME!

This is the eXtension UPDATE for January 2007. The UPDATE is compiled
from a number of current articles found in the eXtension blog site
http://about.extension.org and other sources. For up-to-date information
on eXtension go to http://about.extension.org.

FREQUENTLY ASKED QUESTIONS SUMMIT SUCCESSFUL

eXtension staff and 12 Community of Practice members met in Lexington, KY

January 20-22 for an intense, hands-on work session including usability and functionality studies of the internal Frequently Asked Questions (FAQ) system. Pioneer CoP members with FAQ experience worked to further develop and enhance the FAQ system from the internal usage and management perspectives of Communities of Practice. Together, CoP members and eXtension staff were able to prioritize and integrate the needs of both the Communities of Practice and the FAQ system to benefit both entities.

FEBRUARY 2007 FILLED WITH PROFESSIONAL DEVELOPMENT OPPORTUNITIES

eXtension's professional development opportunities are open to all Cooperative Extension faculty, staff and employees. This month we are offering "30 Minute Sessions" on topics related to the collaborative work tools such as the wiki and FAQ, and also on social network tools like social bookmarking, blogging, and feeds. Give us 30 minutes and we'll teach you something useful! These sessions will be held via Breeze at http://breeze.extension.iastate.edu/learn and your telephone. Plan to join the session 5 minutes before the starting time.

In addition, from February 12 to March 23, 2007 we're doing a 6-week professional development series open to anyone in Extension who is interested in working in any of the wikis hosted by eXtension.

The goal of this six (6) week seminar series is to allow you to create a piece of content to share in the CoP or Collaborate wiki. In reaching the goal, you will learn about using a wiki, create an article/page in a wiki using the various features available, which may include appropriate use of lists, links, and graphics. Each week of the seminar series will include a short video segment to introduce and explain the topic, and then activities to allow the participant to practice and learn the skills involved for the topic. Each participant is encouraged to attend "Office Hours" weekly to ensure he/she is on track before the next week of the series.

Plan to participate? Go to the seminar series page and add yourself to the list before February 7. (Go to the Extension Collaborative Wiki. Click on "Working in MediaWiki - an Article Start to Finish"). Then, the week of February 12, at a time of your convenience, go to the Week 1 link for the Series and jump right in! Questions? Please contact Beth Raney at beth.raney@eXtension.org. We're looking forward to working with you!

*On Thursday February 8 at 3:30 PM Eastern Time (2:30p CT, 1:30p MT, 12:30p PT, 9:30a HT), "30 Minute Session" Using Collaborate for agents/educators to share your educational materials. photos, PowerPoints, diagrams, and other media.

*On Tuesday February 13 at 3:30 PM Eastern Time (2:30p CT, 1:30p MT, 12:30p PT, 9:30a HT), a "30 Minute Session" Social Bookmarking as a collaborative tool -- how to keep your work team on the same page without

burying them in email. Participants will be exposed to several social bookmarking tools with an emphasis on del.icio.us (for all Extension).

*On Thursday February 15 at 3:30 PM Eastern Time (2:30p CT, 1:30p MT, 12:30p PT, 9:30a HT), a "30 Minute Session" FAQ -- FAQ Orientation for agents/educators to find answers to your clients' questions, also how everyone can contribute to enhancing quality of the FAQ System to make it a more valuable resource..

*On Tuesday February 20 at 3:30 PM Eastern Time (2:30p CT, 1:30p MT, 12:30p PT, 9:30a HT), a "30 Minute Session" Feeding Frenzy - an introduction to Web syndication. Feeds are everywhere today. Even eXtension is syndicating everything. So what are these things? How do they work? And most importantly, how can you use them to save yourself a ton of time. Come to the Feeding Frenzy session to learn how you can start using feeds and change your life forever. Participants will be introduced to Google Reader and its use for managing syndication feeds. (for all Extension)

*On Wednesday February 28 at 3:30 PM Eastern Time (2:30p CT, 1:30p MT, 12:30p PT, 9:30a HT), a "30 Minute Session" on the CoP to public eXtension Web site workflow. How does it all work? This session will walk a piece of content from conception through publishing so participants can see how it all works. This session will be less skill-based and will focus on the basics so that CoP members and other can get a feel for the "big picture" of how it all works. HINT: It's not really magic.

To participate in any of the 30 Minute sessions.

1. Five minutes before the start time, go to the Breeze meeting room at http://breeze.extension.iastate.edu/learn.

2. You will be presented with a login screen that has an "Enter as Guest" option. Select that option and click your mouse on the "Click to Enter" button.

3. Enter your first name, your last name, and your institution/university, and then click the "Enter" button to join the conference.

4. To hear the audio of the workshop and participate in the Q&A portion of the workshop we will be using a built-in teleconferencing capability of Macromedia's Breeze conferencing software. Once you log into the meeting you will be presented with the option to enter your call-back number, your phone will automatically be called. After entering your number you will be automatically called and joined into the audio portion of the Web conference on your phone.

If you or a colleague would like to get notices about upcoming professional development sessions offered by eXtension, go to https://lists.extension.org/mailman/listinfo/learn and subscribe to the

"Learn" email list.

Add these to your calendar, and plan to join us on for one or more of these sessions in February!!

FIRST 2007 NATIONAL eXtension VIDEOCONFERENCE SCHEDULED

eXtension will host its first national videoconference for 2007 on Wednesday, February 21. A detailed agenda and directions for accessing the videoconference will follow in an email and posting on the http://about.extension.org blog site. Generally the national videoconferences serve as a quarterly update on the eXtension initiative and offer opportunities for questions and answers and interaction with the eXtension staff. The 2007 schedule for quarterly videoconferences follows. Each videoconference is scheduled on a Wednesday afternoon from 2:30-4:00 p.m. ET. The remaining 2007 dates are:

May 16, 2007
August 1, 2007
October 17, 2007

REMINDER: GET YOUR eXtension ID NOW!

One of the first steps to being fully engaged with the eXtension initiative is to create an eXtension ID. By doing so you'll be allowed to work in the eXtension collaborative space, you can become a member of one of 20 Communities of Practice, and you'll be registered to receive routine email updates on the initiative.

It's a simple process! Just click here (http://people.extension.org) and you'll be taken to the registration page. Encourage your friends and colleagues in Cooperative Extension to do so today!

Terry Meisenbach, eXtension
Communications & Marketing
26600 Avenida Quintana
Cathedral City CA 92234
760-318-0276 office phone
760-318-2942 fax
760-641-9354 cell phone
Terry.Meisenbach@eXtension.org

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APPENDIX C

>>> Lawrence Lippke 11/17/2006 9:19:36 am >>>
TO: Extension Faculty/Staff

Yesterday, many of you received the following message in your email box:

**********BEGINNING OF MESSAGE**********
>>> Terry Meisenbach <eXtensionHelp@extension.org> 11/16/2006 2:54:08 pm >>>
Hi XXXXXXX,

As the holder of an eXtensionID, you are an integral part of the eXtension initiative. Your contributions to eXtension through working in a Community of Practice, submitting and answering Frequently Asked Questions, engaging in professional development courses online, or working with other eXtension applications is critical to our success. We thank you for your contributions.

eXtension has recently adopted a Contributor and Business Agreement and, as an eXtensionID holder, we are asking you to agree to participate in eXtension under that agreement.

At this time we need you to go to

https://people.extension.org/account/contributor_agreement

and review the ag reement and either accept or not accept the agreement. You will have until December 18, 2006 to review and accept the agreement.

You may login using your eXtensionID or registered email address.
**********END OF MESSAGE**********

I am now receiving messages from some of you inquiring about the legitimacy of this message, and wondering who Terry Meisenbach is. Well, this message is VERY MUCH legitimate. eXtension is a national effort of every Extension institution in the country. As you may recall, earlier this week I distributed an announcement about the Financial Security for All site coming up online, and a couple of months ago I announced the availability of the HorseQuest website available through eXtension. I invite you to view both http://www.extension.org and http://www.extension.org/pages/About_eXtension to read more about it.

Further, Terry Meisenbach is the former communications leader for CSREES, who retired last year, but who was hired part time to assist with the eXtension effort.

As far as an eXtension ID, anyone participating in the FAQ solicitation effort we ran about a year ago has one of these. And, a few months ago we announced the availability of the eXtension FAQ system and encouraged folks to create an ID and sign in to view, add, or edit answers to questions that were posted to that website.

So, please do not think that this message is spam. It is legitimate, and I encourage you to take the actions requested in that message from Terry.

11/21/2006

VITA

Name: Amy Marie Harder

Address: 107 Scoates Hall
2116 TAMU
College Station, TX 77843-2116

Education: B.S., Equine Science, Colorado State University, 2000
M.Agr., Extension Education, Colorado State University, 2001
Ph.D., Agricultural Education, Texas A&M University, 2007