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Dona Lakai

Ministry of Agriculture and Agro-Based Industry, Malaysia

K. S. U. Jayaratne

North Carolina State University, jay_jayaratne@ncsu.edu

Gary E. Moore

North Carolina State University

Mark J. Kistler

North Carolina State University

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Identification of Current Proficiency Level of Extension Competencies and the Competencies Needed for Extension Agents to Be Successful in the 21st Century

Dona Lakai

Ministry Of Agriculture and Agro-Based Industry, Malaysia

K. S. U. Jayaratne

Gary E. Moore

Mark J. Kistler

North Carolina State University

In this era of globalization, competency is an issue of concern to any field of professionals and their clients. Competency is an integrated set of skills, knowledge, and attitudes that allow one to effectively carry out the activities of a given work to the standards expected in the employment context. The purpose of this descriptive survey study was to determine the current proficiency level of North Carolina Cooperative Extension agents' competencies and the other competencies they need to develop to be successful in Cooperative Extension. Findings indicate that the current proficiency level of competency for Extension agents in North Carolina Cooperative Extension varies from moderate to high in all 42 items listed in the survey. Multiple regression analysis confirmed that Extension agents' years of Extension experience and age were major determinants of their overall proficiency level. Extension agents' proficiency levels did not vary with gender, level of education, professional association affiliation, job position, or area of job responsibility. The research revealed that emotional intelligence, interpersonal skills, flexibility for adapting to changing environments, and ability to manage resources were the most significant other competencies needed for Extension agents to be successful in current context.

Keywords: Extension agents, identification, Extension competencies, needed competencies for the 21st century

Introduction and Theoretical Framework

Globalizing economy and technological advancements have forced Extension to review the competencies Extension agents need to perform their current jobs effectively and efficiently.

Direct correspondence to K. S. U. Jayaratne at jay_jayaratne@ncsu.edu

Over the last decade, establishing competencies has become a widespread practice in many organizations (Bartram, Robertson, & Callinan, 2002; Cavallo & Brienza, 2001; Olsen, Bhattacharya, & Scharf, 2006). Focusing on competencies helps organizations effectively communicate the responsibilities, knowledge, and skills needed for positions to their employees. It generates highly knowledgeable and proficient employees who are the most valuable resources for an organization. The success of the organization depends greatly on the knowledge and abilities of the employees (American Society for Training & Development, 2006).

Extension needs to proactively recognize when change is necessary, respond, and manage it effectively. In the Extension Committee on Organization and Policy (ECOP) “Vision for the 21st Century” report (2002), one of the recommendations for Extension was to meet those changing needs “by building an organization that empowers, encourages, and supports shared leadership and proactive decision-making by individuals who have the most relevant information and who operate at a level close to the issues” (p. 6).

A major concern for Extension is determining which professional competencies are most needed by the organization and committing resources to acquire, develop, and utilize them. According to Stone and Bieber (1997), competency is not a new concept for Extension, which has long looked to better its performance. McCormick (1959), as cited in Gibson (2003), stated that as early as 1959, the National Committee on Extension Administrators had identified nine competencies that were imperative for Extension agents’ success. But rapid and continuous changes and challenges in technology require Extension professionals to constantly develop and improve their capabilities (Trede & Whitaker, 2000). The success of Extension programs is determined mostly by the ability of Extension agents to acquire the proficiency of needed competencies, because the overall Extension process is dependent on Extension agents’ ability to transfer new knowledge, skills, and technology to their clients.

According to Stone and Bieber (1997), continuous efforts are necessary to determine new knowledge, skills, and behaviors needed for agents to achieve excellence in Extension. These efforts will ensure that Extension will still be relevant in the 21st century and beyond. The participatory process of developing competencies will also assist Extension professionals to continuously identify and validate the competencies that are important to achieve excellence.

Traditionally, the development of competencies is based on job responsibilities, but Langdon and Marrelli (2002) argued that it is more significant to generate competencies based on the needed outcomes from the job. Identification of job competencies “through a combination of techniques and models” is widely practiced by organizations (Marrelli, 1998, p. 8). Stone (1997) described competencies as the application of knowledge, technical skills, and personal characteristics that are designed around the abilities individuals and groups need to give effective job performances and use in making human resource decisions.

According to Langdon and Whiteside (2004), the general definition of competency includes only skills, knowledge, and attributes. However, Bartram, Robertson, and Callinan, (2002) defined competencies as “sets of behaviors that are instrumental in the delivery of desired results or outcomes” (p. 7), while Klein (1996) argued that a competency can also be considered behavioral when it involves only visible behaviors without any judgment, theory, or explanation.

Dubois (1998), as cited in Teodorescu (2006), defined competency as “those characteristics—knowledge, skills, mindsets, thought patterns, and the like—that when used whether singularly or in various combinations result in successful performance” (p. 28). McLagan (1997) suggested that competencies can be viewed in six different ways: (a) job tasks, (b) results of work efforts, (c) outputs, (d) knowledge, skills, and attributes, (e) qualities that describe superior performers, and (f) bundles of attributes. With so many different ideas of what competency represents, it is critical for organizations to define the right competency for each role to ensure they obtain the desired results.

In 1992, the Personnel and Organizational Committee of the ECOP identified 16 core competencies that all Extension professionals should acquire (ECOP, 1992). The competencies were applied research, change management, communications and human relations, computer operation and software, conflict resolution, knowledge of the Cooperative Extension Service (CES), educational programming, evaluation and accountability, instructional development and learning, marketing and public relations, organizational development, personal organization and management, professional and career development, public policy education, resource development and management, and strategic planning (ECOP, 1992).

There have been several other studies over the years that support the need for core competencies for the success of various professionals in Extension (Boyd, 2003; Burke, 2003; Fox, Sasser, & Arcemont, 2013; Gonzalez, 1982; Gregg & Irani, 2004; Reynolds, 1993). The Southern Regional Extension Leadership (as cited in Gibson, 2003) identified job management, relating to others, team building, and thinking clearly as major areas of competencies that were believed to be important for the efficiency of Extension professionals. Professionals need to be fully aware of the competencies associated with their job in order to advance in a career ladder (Fox et al., 2013).

Texas Cooperative Extension developed a system-approach to professional development referred to as You, Extension, and Success (*YES!*). The foundation for *YES!* is a set of core competencies that were divided into six broad categories: subject matter expertise, organizational effectiveness, develop and involve others, communications, action orientation, and personal effectiveness (Stone & Coppernoll, 2004). *YES!* is a starting point for Extension employees in Texas to develop professional goals, increase personal achievement, and make an impact in Extension.

Learning to manage resources is an important competency for Extension agents. For example, Place and Jacob (2001) reported that Extension professionals need resource management and stress management competencies to manage stress and pressure in the workplace. It would help them balance work and family, which would lead to better performance and organizational effectiveness. Warrix and Bocanegra (1998) emphasized that Extension agents must understand the culture, values, and attitudes of their clients to develop effective Extension programs. Cultural competency is becoming more important for Extension agents to provide useful information and advice to a diverse population.

In a comparison study between administrative heads of agriculture and participants attending the Association of Leadership Educators Annual Conference, Moore and Rudd (2003) reported that both groups were looking for a list of comparable competencies needed by Extension leaders. The findings of the study also showed the importance of involving various groups and levels of the organization for the identification and development of core competencies required for Extension leadership (Moore & Rudd, 2003). This supports the notion that the establishment of core competencies needs the involvement of various groups to identify and validate the competencies that are important to achieve professional excellence in Extension.

The Blue Ribbon Commission (BRC) on staff development and training was established in 1998 by the North Carolina Cooperative Extension. The Personal and Organizational Development (POD) unit of the North Carolina Cooperative Extension was established to further improve the core competencies determined by the BRC. The POD defined seven core competencies for all Extension professionals in the state, including County Extension Directors (CEDs), administrators, agents, specialists, and volunteers (North Carolina Cooperative Extension, 2001). The North Carolina Cooperative Extension competency model consists of competencies, subcompetencies, and proficiencies defined for each Extension professional group.

The existing competency standards for North Carolina Cooperative Extension agents were developed and introduced by the Personal and Organizational Development Unit in 1999. The competency standards need to be redefined based on current needs and new situational changes, such as global marketing and technological changes; however, there has not been any research to identify the desired competencies after establishing the competency standards a decade ago. The Extension programming environment has changed over the last decade due to urbanization, changes in socioeconomic structure, and technology. This situation can create a gap between what was defined as the desired competency standards in 1999 and the desired competencies in the current context. To be a successful Extension agent today, one must be competent not only in technical subject matter, but also in areas such as management, programming, communication, human relations, and leadership (Gonzalez, 1982; Graham, 2009; Reynolds, 1993; Stone & Coppernoll, 2004).

The changing environment has forced Extension to review the competencies Extension agents need in order to perform their current jobs effectively and efficiently. Extension agents have to adapt to the changing environment and needs of the populations they serve. This situation indicates the need to determine the current areas of competency of Extension agents and identify the new competencies necessary for them to effectively serve the needs of diverse clients in the 21st century. A greater understanding of the competencies needed by existing and newly hired Extension agents is important for organizational development (Owen, 2004).

According to Gander (2006), existing competency assessment tools do not constantly measure the competency gap of employees over time because the requirements or standards are changing with time. Gander (2006) developed a measurement tool, called the Outcome Proficiency Indicators Scale (OPIS), that statistically monitors any changes in expertise levels of individuals or groups. Most organizations have a well-defined competency list, but usually lack the ability to measure, enhance, and fulfill those competencies (Langdon & Whiteside, 2004). Competencies are traditionally developed based on existing high achieving qualities in the organization, but they may not produce the same outcomes in the future (Gayeski, Golden, Andrade, & Mason, 2007). Therefore, it is vital for any organization to continuously evaluate, identify, and improve its competencies to be successful in the changing environment.

Identification of Extension agents' current proficiency level of competencies is important for determining in-service training needs. Also, it is necessary to understand whether Extension agents' proficiency levels vary with their demographic characteristics, such as age, gender, job position, level of education, experience, subject matter responsibility, and professional association affiliation for designing tailored in-service training programs for specific groups of Extension agents based on their proficiency levels and demographics.

Purpose and Objectives

The purpose of this study was to determine the current proficiency level of North Carolina Cooperative Extension agents' competencies and the competencies needed to be successful in the 21st century. More specifically, the study aims to achieve the following objectives:

1. Describe Extension agents' demographic characteristics.
2. Determine Extension agents' current proficiency levels of competencies.
3. Determine whether Extension agents' proficiency levels vary with their age, gender, job position, level of education, experience, subject matter responsibility, and professional association affiliation.
4. Identify other competencies important for Extension agents to be successful in the 21st Century.

Methods

This was a descriptive survey research study conducted online with a random sample of Extension agents in North Carolina.

Population and Sampling

All Extension agents in North Carolina comprised the study population. The 2009 Extension agent directory maintained by the North Carolina Cooperative Extension Director's office was the population frame used to draw the study sample randomly. There were 332 Extension agents in the population. An online sample size calculator based on Krejcie and Morgan's (1970) guidelines was used to calculate the sample size. The required sample size based on the sampling frame of 332 was 178 for achieving a 95% level of confidence with a 5% margin of error for this population. However, literature indicates that Extension agents' response rate to surveys can be as low as 65.2% (Edwards, McLucas, Briers, & Rohs, 2004). The pilot study conducted with 20 randomly selected Extension agents in North Carolina received a 50% response rate with one e-mail. Based on this information, it was assumed that with two or more e-mails, the study could achieve a 65% response rate with Extension agents. Based on this assumption, the sample size was recalculated adjusting for a 65% response rate. The adjusted sample was 274 agents. The simple random sampling procedure was followed for drawing the study sample.

Instrumentation

The survey instrument was developed to determine the current situation of the Extension agents' proficiency levels on various competencies and the new competencies they needed to be successful. The survey instrument contained closed-ended and open-ended questions. The instrument consisted of a scale for recording proficiency levels, desired other competencies, and demographic information questions. The proficiency recording scale consisted of 42 items related to the competencies defined by North Carolina Cooperative Extension in 1999 on a five-point Likert scale, ranging from 1 = *Very Low* to 5 = *Very High*. The 42 items in the scale were grouped into seven competency categories containing six items each. The seven competency categories were organizational knowledge, technical/subject matter expertise, programming, professionalism, communications, human relations, and leadership. Respondents were asked to report their current level of proficiency. The total score of each competency category ranged from 6 being the lowest to 30 being the highest. The overall Extension proficiency score ranged from 42 being the lowest proficiency level to 210 being the highest proficiency level on the overall 42-item scale. The self-reporting of proficiencies has a potential to result in an elevated report of proficiency compared to the actual level; this can be considered as a limitation of this study. In addition to the given 42 competencies, respondents were asked to list new

competencies they felt were important to being successful. The demographic section gathered information on age, gender, current positions in Extension, level of education, years of experience in Extension, major areas of program responsibility, and membership in any Extension-related professional associations. This questionnaire was developed for collecting data online.

Validity and Reliability

Content validity was established by using a panel of experts in the Extension education field. The panel of experts was given a copy of the instrument and asked to comment on its contents. Experts' comments and suggestions were incorporated into the final instrument. The instrument was then pilot-tested with 20 Extension agents to identify face validity and determine the reliability of the proficiency recording scale. Pilot study participants were excluded from the final sample. Changes were made according to the pilot study participants' suggestions to ensure that the questions were clear and meaningful. Data from the pilot test were analyzed to assess instrument reliability. Cronbach's alpha was .94 for the 42-item Extension competency proficiency scale. Cronbach's alpha values for the core competency subscales are in Table 1.

Table 1. Cronbach's Alpha Values for the Proficiency of Core Competency Subscales

Name of the Six-item Competency Subscale	α
Organizational Knowledge	.89
Subject Matter Expertise	.88
Educational Programming	.86
Professionalism	.79
Communications	.81
Human Relations	.85
Leadership	.91

Data Collection and Analysis

In the summer of 2010, data were collected using an online survey. First, an e-mail was sent to Extension agents in the sample providing the purpose of the study, a consent form, and the survey link. They were given two weeks to respond. After two weeks, a follow-up e-mail was sent with the link asking agents to respond within a week. Respondents and nonrespondents were not identified to maintain anonymity. Therefore, the second follow-up e-mail was sent to all participants after the initial response deadline. The survey received 180 responses, comprising a 66% response rate. Early and late respondents were compared to address nonresponse error (Lindner, Murphy, and Briers, 2001). No significant difference between early and late respondents was found, indicating results can be generalized to the study population.

The data were analyzed using the SPSS 19 program (SPSS, 2009). Descriptive statistics were used to summarize findings. A multiple regression analysis was used to determine whether the

current levels of Extension agents' proficiency in the core competencies varies with their demographic characteristics. Descriptive statistics were used to describe the demographic characteristics of respondents. The data obtained from the open-ended questions were summarized by using content analysis.

Findings

Findings are organized and presented under the objectives of this study.

Objective 1. Extension Agents' Demographic Characteristics

The majority (61%) of respondents were female. Age of respondents ranged from 23 to 64 years, with a mean of 42.1 years. Seventy-eight percent of respondents were in the 30 to 59 years age category. Only 5.4% of respondents were over 59 years. Respondents were highly educated, with the majority (61.8%) having master's degrees; only 3.4% had doctoral degrees.

Of the respondents, 44% were Extension Agents, 20% were Associate Extension Agents, and 34.3% were Assistant Extension Agents in their job ranks. The remaining respondents were categorized into Other. Of the respondents, 33.9% were Agriculture agents, 23.2% were Family and Consumer Sciences agents, 18.6% were 4-H and Youth Development agents, and 17.8% were Horticulture agents. Forestry and Natural Resource agents, Community Development agents, and Other made up a small percentage (6.2%) of respondents. Most of the respondents (88.3%) were members of Extension professional associations; only 11.7% were not a member of any Extension professional association. Respondents' years of experience in Extension varied from less than a year to a maximum of 35 years, with a mean experience of 12.2 years. The data indicate that the majority (53.6%) of respondents had less than 11 years of work experience in Extension. Nearly one third of respondents had five years or less experience in Extension. Only 10.5% of respondents had 25 or more years of Extension experience.

Objective 2. Extension Agents' Current Proficiency Level for Competencies

The seven core competencies recommended by the Blue Ribbon Commission for all Extension professionals in North Carolina Cooperative Extension are *Organizational Knowledge, Subject Matter Expertise, Educational Programming, Professionalism, Communications, Human Relations, and Leadership* (North Carolina Cooperative Extension, 2001). Extension agents' current levels of proficiency in these seven core competency areas were assessed. Six unique subcompetencies for each of the core competency areas were used to determine Extension agents' current level of proficiency. Proficiency levels were recorded on a five-point Likert scale, ranging from 1 = *Very Low* to 5 = *Very High*. The mean score and standard deviation on this scale for each of the 42 subcompetencies are in Table 2.

Table 2. Respondents' Current Proficiency Level for Subcompetencies

Competency	M	SD
Organizational Knowledge		
Understand vision and mission of CES	4.08	0.72
Understand organizational structure of CES	4.02	0.71
Identify partners and stakeholders of CES	3.87	0.81
Identify policies specific to your area(s) of responsibility	3.86	0.91
Understand the policies of CES	3.75	0.78
Understand Extension organizational procedures	3.55	0.74
Subject Matter Expertise		
Apply relevant subject matter to real life problems	4.33	0.65
Explain relevant subject matter	4.29	0.67
Identify research-based information	4.24	0.70
Develop a program on the subject matter	4.18	0.73
Identify appropriate delivery strategies	4.15	0.73
Demonstrate technology skills pertinent to subject matter	4.06	0.73
Educational Programming		
Utilize effective teaching methods	4.14	0.70
Understand basic components of educational programming	4.07	0.74
Acquire teaching resources for your subject area	4.05	0.79
Prepare an annual plan of work for area of responsibility	3.78	0.82
Recruit and manage volunteers	3.60	0.86
Evaluate extension program	3.42	0.75
Professionalism		
Identify opportunities for professional development	3.93	0.74
Participate in Extension professional associations	3.84	0.88
Manage multiple tasks	3.82	0.77
Manage time effectively	3.64	0.82
Interpret research findings	3.57	0.82
Manage stress	3.39	0.88
Communications		
Make clear and convincing oral presentations	4.02	0.75
Develop good listening skills	3.98	0.71
Fostering an environment for open communication	3.93	0.68
Write effectively for target audience	3.93	0.78
Use latest communications technology	3.56	0.88
Develop a marketing plan for programs	3.48	0.86
Human Relations		
Develop trusting professional relationships	4.04	0.73
Provide consultation to clientele groups	4.01	0.72
Establish relationship with subject matter specialists and peers	3.98	0.75
Use professional network to enhance programs	3.92	0.74
Understand diversity in extension	3.84	0.82
Manage conflicts	3.53	0.78
Leadership		
Apply critical thinking skills	3.91	0.70
Understand relationship of personal goals to job performance	3.82	0.81
Understand leadership principles	3.82	0.78
Understand workgroup dynamics	3.66	0.76
Nurture leadership skills in others	3.59	0.85
Develop a plan for building personal leadership skills	3.58	0.75

Note. Scale: 1 = *Very Low*; 2 = *Low*; 3 = *Moderate*; 4 = *High*; 5 = *Very High*

Mean values close to 5 on this scale indicate that Extension agents have a high level of proficiency in those subcompetencies. The mean scores of all 42 subcompetencies in the scale ranged from 3.39 to 4.33. The five most proficient subcompetencies were *applying relevant subject matter to real life problems* ($M = 4.33$), *explaining relevant subject matter* ($M = 4.29$), *identification of research-based information* ($M = 4.24$), *developing a program on the subject matter* ($M = 4.18$), and *identification of appropriate delivery strategies* ($M = 4.15$). All of these highest proficiency rating subcompetencies are in the *Subject Matter* core competency category. The five least proficient subcompetencies were *managing stress* ($M = 3.39$), *evaluation of Extension programs* ($M = 3.42$), *development of a marketing plan for programs* ($M = 3.48$), *managing conflicts* ($M = 3.53$), and *understanding Extension organizational procedures* ($M = 3.55$).

Core competency proficiency levels. The proficiency scores for each of the subcompetencies were aggregated to get the score for each of the seven core competencies. The score on this aggregated scale can range from 6 to 30, with mean values close to 30 indicating a high level of proficiency for core competencies. As summarized in Table 3, the highest mean value ($M = 25.2$) was reported for the *Subject Matter Expertise* competency category, followed by *Human Relations* competency category ($M = 23.3$). The lowest mean value ($M = 22.2$) was reported for the *Professionalism* competency category.

Table 3. Respondents' Current Proficiency Level for Core Competencies

Core Competency	<i>M</i>	<i>SD</i>
Subject Matter Expertise	25.2	3.34
Human Relations	23.3	3.44
Educational Programming	23.0	3.57
Organizational Knowledge	22.9	3.74
Communications	22.9	3.36
Leadership	22.4	3.85
Professionalism	22.2	3.41
Overall Competency	161.8	20.74

Note. Core Competency Scale: 6 = *Very Low*; 12 = *Low*; 18 = *Moderate*; 24 = *High*; 30 = *Very High*

Overall proficiency levels. The scores of all 42 subcompetencies were aggregated to get the overall proficiency level of Extension agents. The overall proficiency score on this scale can range from 42 to 210. The overall proficiency score ranged from 94 to 210 with the mean value of 161.77 (Table 3). The distribution of respondents' overall proficiency scores in quartiles is summarized in Table 4. Respondents were distributed between the 2nd quartile and the 4th quartile. The majority (59.3%) of respondents were in the 3rd quartile (127 to 168).

Table 4. Distribution of Overall Proficiency Score

Range of Scores for Quartiles	<i>n</i>	%
1 st quartile (42 to 84)	0	0
2 nd quartile (85 to 126)	10	6.0
3 rd quartile (127 to 168)	99	59.3
4 th quartile (169 to 210)	58	34.7

Objective 3. Determine Whether Extension Agents' Proficiency Levels Vary with Their Demographic Characteristics

A multiple regression analysis was used to determine whether Extension agents' overall proficiency levels vary with their demographic characteristics. The overall competency was the dependent or criterion variable, while demographic characteristics were used as independent or predictor variables in regression analysis. The demographic variables used in this regression analysis include gender, age, Extension experience, job rank, content area, and professional association affiliation.

The linear combination of the demographic variables included in the regression analysis was significantly related to the proficiency level of respondents as summarized in Table 5. The coefficient of determination (r^2) was 0.30, indicating that 30% of the variability in proficiency level can be predicted from the demographic variables included in the linear regression function. This linear function was significant at $p = .001$ level.

The beta (β) value shows the strength of the correlation between the predictor variable and the criterion variable. Of the demographic variables in the regression function, years of Extension experience and age were the only variables that had significant beta values as summarized in Table 5. Years of Extension experience had the highest beta value ($\beta = .24$), followed by age ($\beta = .21$). Respondents' years of Extension experience and age were positively correlated with their overall proficiency level. Gender, job position, level of education, area of job responsibility, and professional association affiliation did not correlate with their overall proficiency levels. These findings indicate that Extension agents' proficiency levels did not vary with demographic differences, except age and years of Extension experience.

Table 5. Regression Model to Predict the Overall Proficiency Level of Extension Agents Using Their Selected Demographic Variables

Demographic Variables	β	<i>t</i>	<i>p</i>
Age	.21	2.06	.04*
Gender	.00	0.07	.94
Job position	.03	0.34	.73
Highest education level	.13	1.58	.12
Years of experience in Extension	.24	2.08	.04*
Major area of job responsibility	.14	1.79	.08
Professional association affiliation	.03	0.46	.64

Note. * $p < .05$ (Regression Model: $F = 8.3$, $p < .001$, $r^2 = .3$, adjusted $r^2 = .26$)

Objective 4. Other Competencies Important for Extension Agents

Participants in this study were asked to list other competencies they considered as very important to being an effective Extension agent in the current context. Of the 180 respondents, 77 listed additional new competencies. These responses were analyzed for the content and categorized into identifiable competency themes. A total of four additional competencies were identified, as summarized in Table 6. Approximately 34.7% of respondents identified *emotional intelligence* as the most essential additional competency in the current context. This would include *motivation, self-confidence, and empathy*. Respondents perceived *interpersonal skills*, which included *social skills*, as another important additional competency for Extension agents. Other additional competencies identified by respondents were *flexibility or adaptability* and *managing resources*.

Several new competencies identified by respondents were an expansion of existing core competencies for Extension agents in North Carolina Cooperative Extension, especially under the *Educational Programming, Technical/Subject Matters, and Professionalism* competencies. Several respondents indicated that program evaluation and understanding how to use the Extension Reporting System (ERS) were important competencies in order to ensure accountability of Extension programming. Respondents also pointed out the need for Extension agents to have research knowledge competencies to understand the research process, and to interpret and apply recommendations to real life problems.

Table 6. New Competencies Considered Important for Extension Agents

New Competencies	<i>n</i>	%
Emotional intelligence	17	34.7
Interpersonal skills	12	24.5
Flexibility/adaptability	11	22.4
Managing resources	9	18.4

Conclusions

The majority of the Extension agents in North Carolina were well-educated, young females with less than 11 years of experience. According to Ensle (2005), Extension administrators need to understand how young agents' values will affect the Extension organization in the future, as they are likely to give up opportunities for professional development in exchange for more time with family and friends. The majority (88.3%) of the Extension agents in North Carolina Cooperative Extension are affiliated with a professional association, indicating their commitment to professional development. Extension agents' participation in a professional association can help them learn about the professional expectations of Extension (Strong & Harder, 2009).

North Carolina Cooperative Extension agents' current level of proficiency in 42 subcompetencies ranged from 3.39 to 4.29 on a five-point Likert scale (1 = *Very Low*, 5 = *Very High*) indicating that they had a *moderate to high* level of proficiency in those areas. The most proficient subcompetencies are *application of relevant subject matter to real life problems*, *explaining relevant subject matter*, *identification of research-based information*, *developing a program on the subject matter*, and *identification of appropriate delivery strategies*. All of these high rating subcompetencies are in the *Subject Matter Expertise* core competency. This implies that Extension agents are better prepared for serving the technical information needs of clients. They also have a high level of proficiency in subcompetencies such as *utilizing effective teaching methods*, *understanding of vision and mission of CES*, *understanding of basic components of educational programming*, *acquiring teaching resources for their subject area*, and *developing trusted professional relationships*. The least proficient subcompetencies are *managing stress*, *evaluating programs*, *developing marketing plans*, *managing conflicts*, *using latest communication technology*, *interpretation of research findings*, and *understanding the organizational procedure*. These findings lead to the conclusion that North Carolina Cooperative Extension agents are proficient in their technical content areas, developing educational programs, and building professional relationships. However, their ability to deliver effective educational programs can be negatively impacted by the least proficient competencies, such as ability to manage stress and conflicts. This finding emphasizes the need for additional training for Extension agents to manage stress while balancing their job and personal life. Ezell (2003) found a positive relation between agents' job stress and their intention to leave Extension.

North Carolina Cooperative Extension agents have moderate to high level of proficiency in all seven core competency areas. *Subject Matter Expertise* is the most proficient competency. *Professionalism* is the least proficient competency. The overall proficiency scores of 94% are in the upper two quartiles, indicating that most of the Extension agents have a moderate to high level of proficiency in North Carolina Cooperative Extension-defined competencies.

Based on the regression analysis, it can be concluded that Extension agents' overall competency level has positive correlations with their years of Extension experience and age. In other words, older agents and more experienced agents have a higher proficiency level of Extension competencies. Extension agents' proficiency levels do not vary with other demographic variables, such as gender, level of education, professional association affiliation, job position, or program area of responsibility. Similar to these findings, Burke (2003) reported that 4-H agents' level of knowledge, importance, and use of competencies did not vary with their gender, education, ethnic background, and job responsibilities, except for age and years of experience. Fox et al. (2013) also reported a strong positive association between 4-H Extension agents' years of experience and their level of youth development competence. This literature further validates the conclusion and emphasizes the need for more attention to the learning needs of new Extension agents when core competency building in-service training programs are designed.

Extension agents identified *emotional intelligence (EI)*, *flexibility/adaptability*, *interpersonal skills*, and *managing resources* as the most important competencies needed in addition to current competencies recommended by North Carolina Cooperative Extension. It is essential for Extension to recognize the importance of EI competencies for today's workforce (Ayers & Stone, 1999; Moore & Rudd, 2003). Individuals with emotional competency have the skill to manage their emotions in response to an event or situation and react accordingly. Extension agents in this study emphasized managing stress, good work and personal ethics, self motivation and self-direction, and integrity, as other important subcompetencies needed to be successful in their job. These findings are compatible with the findings of a study conducted with Extension professionals in Arkansas that reported personality qualities, including dependability, fairness, honesty, and trustworthiness, were the most valued competency qualities for Extension professionals (Cooper & Graham, 2001). Similar to this, Roberts, Dooley, Harlin, and Murphrey (2007) reported personality qualities are important competencies for agricultural teachers to be successful. Personal integrity, high levels of motivation, and eagerness are important emotional competencies, but are rarely included in educational programs (Moore & Rudd, 2005).

The Extension agents stressed *interpersonal skill* as an important additional competency. Interpersonal skill is necessary for Extension agents to interrelate effectively with their diverse clients. In the current North Carolina Cooperative Extension competency model, the *networking* subcompetency focused on the relationship and collaboration between subject matter specialists, colleagues, and others to develop training curricula. It is important to re-evaluate and include these subcompetencies to meet the needs of agents in the current context. Similar to this finding, Cooper and Graham (2001) reported that personal skills, including people skills, positive attitudes, friendliness, and self motivation, are important competencies for agents to be successful. Building people skills will ensure continuous success for Extension in the current environment (Cooper & Graham, 2001). Extension professionals need to develop partnerships with their stakeholders and build up trust to support their work (Cochran, 2009).

Flexibility and managing resources are two other competencies stressed by the agents. Flexibility is needed when the organizational environment is experiencing changes (Bartram, Robertson, & Callinan, 2002; Cochran, 2009). Demographic changes, technology advancements, and the global market create new challenges for Extension. Under these challenging conditions, Extension professionals have to adjust for new working environments. Extension agents in this study acknowledged the importance of managing limited resources, especially financial resources. Respondents also emphasized the need for *grant writing* competency. This is an important competency for success in securing additional funding for their Extension work, especially in a difficult economic context.

The Extension agents stressed the significance of *research knowledge-related* subcompetencies to understand the research process and to interpret and apply recommendations to real life issues.

The research competency is not listed under any of the major subcompetencies for agents in current North Carolina Cooperative Extension competency model. Program evaluation and research methods are important training needs for Extension agents (Radhakrishna & Martin, 1999). This finding emphasizes the need for adding *understanding the research process* as a subcompetency for Extension agents.

Recommendations

Since one-third of the Extension agents in this study have five years or less Extension experience and the overall proficiency level for core competencies positively correlated with years of experience, it is necessary to pay special attention when planning in-service educational programs for new agents to help them develop core competencies. Ezell (2003) recommended that Extension organizations give more attention to developing new employee orientation that focuses on specific job expectations before assigning them into the actual work environment with its accompanying demands and expectations. Maddy, Niemann, Lindquist, and Bateman (2002) suggested that information on core competencies needs to be included in new staff orientation and staff development professional plans to ensure effective utilization of the core competencies. A long-term professional development plan can be prepared by helping Extension professionals conduct self-evaluation in the early years of tenureship to ensure acquisition of core competencies (Owen, 2004). Also, the acquisition of competencies should be considered as an important part of the worker's performance assessment (Boyd, 2003).

North Carolina Cooperative Extension agents are more proficient in the *Subject Matter Expertise* area in which they have been assigned, but are less competent in *Professionalism, Leadership, Communications, Organizational Knowledge, Educational Programming, and Human Relations* core competency areas. *Subject Matter* competency alone will not produce desired Extension outcomes. Other core competencies are equally important for individuals to be successful in Extension programming in the current social, political, and economic context. These are complimentary competencies for Extension agents to utilize their subject matter expertise in planning and delivering effective educational programs. Therefore, it is necessary for Extension administration to shift the attention from providing in-service training on *Subject Matter* competency to other core competency areas for enhancing the proficiency levels of Extension agents. Since overall proficiency levels do not vary with Extension agents' job position and program area of responsibility, in-service programs for building these core competencies can be organized for Extension agents without segregating them based on their job position or content responsibility as is the norm in most instances.

Since the North Carolina Cooperative Extension competency model was developed over 10 years ago, it is time to update it by adding necessary competencies, such as *Emotional Intelligence, Interpersonal Skills, Adaptability, and Managing Resources*, to help Extension agents prepare for

the current situation. Motivation, self-confidence, and empathy are part of emotional intelligence. These are necessary subcompetencies for working with the public. Therefore, it is important to update North Carolina Cooperative Extension competencies with these new competencies to ensure the success of Extension in the 21st century.

Further research is needed to identify core competencies for Extension agents to be successful in the new century. Utilizing a broad sample of Extension agents would allow for the generalization of findings to Extension agents in others parts of the U.S. A Delphi study with a selected experts in the Extension education profession, followed by a national study with a random sample of county Extension agents would also be a good approach for this research idea.

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Dona Lakai is serving as the Chief Assistant Director, Department of Agriculture Ministry of Agriculture and Agro-Based Industry, Malaysia. She received her BS from the Universiti Pertanian Malaysia, and MS from North Carolina State University.

K. S. U. Jayaratne is an Associate Professor in the Department of Agricultural and Extension Education at North Carolina State University. He received his BS from the University of Peradeniya, Sri Lanka, MS from the University of Illinois, Urbana–Champaign, and PhD from Iowa State University.

Gary Moore is a Professor and the Director of Graduate Studies in the Department of Agricultural and Extension Education at North Carolina State University. He received his BS from Tarleton State College (Texas) and his MS and PhD from The Ohio State University.

Mark J. Kistler is an Associate Professor in the Department of Agricultural and Extension Education at North Carolina State University. He received his BS and MAg from the University of Florida and his PhD from Texas A&M University.