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How Competent Are Agricultural Extension Agents and Extension Educators In Nepal?

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The Innovation in Agricultural Training and Education project—InnovATE—is tasked with compiling the best ideas on how to build the capacity of Agricultural Education and Training (AET) institutions and programs and disseminating them to AET practitioners around the world. As part of this effort, InnovATE issued a Call for Concept Notes to accept applications for discussion papers that address *Contemporary Challenges in Agricultural Education and Training*. These concept papers define the state of the art in the theory and practice of AET, in selected focus domains and explore promising strategies and practices for strengthening AET systems and institutions.

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Abstract

Changing local and global contexts demand competent human resources in agricultural extension services. Extension professionals should possess core competencies such as knowledge, skills, attitudes and behaviors that help them attain excellence in their professions. Training and education have significant impact on workers' core competencies; therefore, agricultural educators have to be competent in teaching the core competencies that students of extension and advisory services need. Studies about core competencies of extension professionals and agricultural educators in Nepal are lacking. This review seeks to explore theories on core competencies and, core competency studies, and proposes core competencies that agricultural extension services in Nepal may find useful.

Introduction

Competent extension professionals are the assets of agricultural extension services. Diverse and dynamic agricultural systems, advancing science and technologies, changing sociodemographics, increasing globalization and growing competition for resources demand agricultural extension professionals to be proficient in the technical aspects of their areas of expertise, as well as in the processes and delivery of the services (Cochran, Ferrari, & Chen, 2012; Gibson & Brown, 2003; Maguire, 2012; Melak & Negatu, 2012; Rivera, Blum, & Sulaiman, 2009; Swanson & Rajalahti, 2010). In other words, the need and demand for extension professionals to demonstrate a higher level of professionalism in their services are growing. As Maddy, Niemann, Lindquist and Bateman (2002) stated, "Extension employees should possess the necessary competencies to anticipate and deliver quality educational programs of relevance and importance to our publics" (p. 1). On a similar note, Qamar (2005) stated that extension workers work in harsh field conditions with limited facilities and less than well- educated clients. Only trained, motivated and competent staff members can work and succeed in such difficult conditions. (Please note that "extension agents" and "extension professionals" are used interchangeably.)

The scope of agricultural extension services (AES) has been widening, and the need to adapt to changing contexts is also growing. AES should work in sustainable agricultural development and play coordinating and leadership roles among agricultural stakeholders (Rajalahti, 2012; Swanson, 2008). The challenges include offering new services, ensuring the quality of services, and strengthening collaboration and synergy among extension service providers (Sulaiman & Davis, 2012). Furthermore, AES should become more participatory, demand-driven and pluralistic (Rivera et al., 2009). This means that, in order to thrive, extension must understand and adjust to rapid changes and emerging challenges (ECOP, 2002). These calls for organizational changes and new tasks indicate the need for multi-skilled human resources in extension services (Cochran, 2009).

Because capable human resources help make efficient and sustainable uses of resources, effectiveness of extension services depends greatly on the preparedness and

competencies of extension professionals. Extension professionals with current knowledge who are able to make informed decisions about agricultural systems and who have skills needed for adaptation and facilitation can make significant contribution to extension services and thus to agricultural development (Hoffman, 2014; Qamar, 2005).

Therefore, the skills, knowledge, behaviors and abilities of extension professionals should be defined and extension services and extension education and training programs should be periodically assessed (Caffarella, 2002; Mulder, 2014). In the same vein, Sarkar (2013) argued that job descriptions and a system for job analyses should be in place to counter various challenges facing AES. Scholars have argued that AES in most developing countries are weak because they lack a proper reward system, the roles of staff members are poorly defined, and job authority, expertise and accountability are lacking (Axinn, 1988; Urmani & Jain, 2010). Studies on knowledge, skills, behaviors and abilities -- core competencies -- of extension professionals in many developing countries, including Nepal, are lacking. Human resource management in agricultural extension services, therefore, remains a challenge. This study seeks to review the literature on the core competencies of extension professionals and suggests core competencies for Nepal.

Here it is important to be clear about what core competencies and competency are. Mulder (2007) argued that competence is the general capability of persons (or organizations) to perform a task or to solve an emerging problem. Seevers, Graham and Conklin (2007) used the term “core competency” to describe the basic knowledge, skills, attitudes and behaviors that contribute to workers’ excellence in their respective professions (e.g., extension education and extension services). Core competencies refer to “process skills” or “soft skills.”

Developed countries, including the United States of America (USA), “which have very advanced agriculture, have always enjoyed strong extension services, first public, and now public and/or private” (Qamar, 2005, p. vii), are at the forefront on core competency studies. U.S. colleges and universities have institutionalized core competencies in their cooperative agricultural extension system. Gibson and Hillison (1994) identified nine core competencies for extension professionals: communication, educational process, effective thinking, extension

organization and administration, program planning and development, research and evaluation, technical knowledge, understanding human development and understanding the social system. Concurrently, the Extension Committee on Organizational Policy (ECOP) has been involved in designing strategies for extension services, including core competencies for U.S. Cooperative Extension professionals. These documents -- Gibson and Hillison (1994) and ECOP (2002) and its subsequent issues — have been instrumental in helping U.S. universities develop their staff members' core competencies and inspired other organizations in the United States and globally to develop and redevelop their staffs' core competencies.

A few studies on core competencies for agricultural extension professionals have been done in Europe (Mulder, 2014), Asia (Khalil, Ismail, Suandi, & Silong, 2009; Rigyal & Wongsamun, 2010; Tiraieyari, 2009; Tiraieyari, Idris, Uli, & Hamzah, 2010) and Africa (Issahaku, 2014; Okwoche & Asogwa, 2012). These studies have some common messages: contexts are changing, competition for resources is increasing, clients are more aware of their need for services than before, and they are demanding quality, reliable and performance-based services. Extension professionals have to be prepared with the knowledge, skills and behaviors to help meet these demands and needs of clients. This applies to Nepal, too. Before discussing the core competencies for Nepal's extension and advisory service professionals, the following paragraph discusses agricultural extension services in Nepal.

Agricultural Extension Services in Nepal

Agricultural extension services (AES) and agricultural education and training (AET) have profound roles in agricultural development. Nepal has been facing low agricultural productivity and food insecurity for several years (ADB, 2012). Quality extension services are beyond the access of many farmers. These questions are being asked: what skills, knowledge, abilities and behaviors are required for extension professionals in Nepal? What have been the trends of AES in Nepal?

Nepal has tried many models and approaches of agricultural extension services, with mixed results. Agricultural extension services started in Nepal in 1952. During the past six

decades, Nepal tried the conventional extension approach, based on diffusion theory, from the 1960s to the 1970s; the training and visit (T and V) approach during the 1970s; and the Integrated Rural Development Project during the 1970s and the 1980s; Tuki[1] in 1977; block production programs in the 1980s; farming system research and extension during the 1980s; and a group approach since the 1990s, followed by the pocket packet strategy (Suvedi & Pyakuryal, 2001). Among these approaches, the T and V model was applauded for serving a large number of farmers and for making farmers aware of many agricultural technologies, but the programs in this model were costly, and they were discontinued once the donor's funding stopped. The government of Nepal could not continue them, citing high costs for maintenance and other associated activities. After promulgation of the Local Self-Governance Act 1999, Nepal has devolved its AES to the district level, but human resource management remains a pressing issue. Suvedi and McNamara (2012) argued that, despite having significant footprints throughout the country, Nepal's agricultural extension services have not been effective in addressing the felt needs of diverse clients, and they suggested organizing service-oriented training for extension workers.

The Department of Agriculture (DOA) and the Department of Livestock Services (DLS) are the two public organizations offering agricultural extension services in Nepal. There are about 9,000 staff members working under these two departments, of whom about 500 extension professionals and/or subject matter specialists (SMSs) work in district offices (DOA, 2011; DLS, 2011). Extension professionals work as liaisons between research and grass-roots extension workers, between researchers and farmers, and between central agricultural authority and grass-roots workers. They also do program planning, implementation and evaluations, play managerial roles, and provide extension and advisory services to the clients, too. Thus, extension professionals are key players in Nepal's AES. Private service providers and non-governmental organizations are also stepping up as AES providers. Thus, agricultural

[1] "Tuki" means a kerosene lamp in the Nepali language; it is a multipurpose progressive leader approach of extension services that Nepal employed in 1977-1980. A Tuki was an enlightened farmer who was supplied with improved inputs to practice on his or her farmland so that others would see his or her works and be motivated to practice (Suvedi & Pyakuryal, 2001).

extension services in Nepal are transitioning to a pluralistic, demand-driven and participatory form.

To speed up the changes in AES, it is essential that core competenicies for extension professionals are defined and that AES and AET programs are aligned with clients' needs. However, weak coordination and linkages between Nepal's agricultural extension services and agricultural education and training, and gaps between these two service sectors remain a challenge. Training and education have not been able to motivate extension workers for better performance; instead, at times they yield frustration because of performance evaluation weaknesses inherent in the entire systems (Thapa, 2010). Furthermore, extension professionals in many developing countries, including Nepal, were trained in traditional education system (ADB, 2012; Belay and Abebaw, 2004; FAO, 2010), and little is known about how able and competent those extension professionals are in serving their clients in changing contexts. It is important to know what core competencies are required for extension professionals in Nepal.

Agricultural Training and Education in Nepal

Three universities — the Agricultural and Forestry University (AFU), Tribhuvan University (TU) and Purbanchal University (PU) — offer tertiary-level courses in agriculture in Nepal. The Council for Technical Education and Vocational Training (CTEVT) provides technician-level (agriculture and livestock) training. Regional training centers run by the DOA and DLS offer in-service training to farmers and staff members, and central training centers (CTCs) provide in-service training to extension professionals.

Swanson (2008) argued that, in most developing countries, AET courses are focused on technical specialization such as crops, livestock and veterinary science. Students do not get adequate orientation on communication, leadership, adult learning and social mobilization. College graduates are weak in knowledge on diversity, communication and teamwork, too. Similarly, Paudel et al. (2013) mentioned that AET in Nepal is focused more on theory than applied learning and process skills.

Emerging Roles of Agricultural Extension Services

Scholars have highlighted the need for active participation of farmers in extension processes, including decision making, so that farmers can voice their needs and can demand and get programs that they deem appropriate (Rivera et al., 2009). Others have emphasized participation, collaboration and cooperation among extension service providers in various aspects of extension services, such as in knowledge, information and resource sharing (Swanson & Samy, 2002; ECOP, 2002).

"Extension" means to extend education or to educate people with the aim of bringing positive behavioral changes and improving the quality of life among those targeted (Qamar, 2005). Dwarakinath (2006) said that communication and adult education are two facets of extension education. Extension professionals need to have knowledge of andragogy — how adults learn. Suvedi and McNamara (2012) underscored that communication and coordination between extension and research are crucial in agricultural services. Extension professionals should know about ongoing research and research findings, and researchers must know what field-researchable problems are. Moreover, demand for information and communication technologies (ICTs) in agricultural extension services is ever growing (Aker, 2011). The use of ICTs makes information dissemination quicker, easier and cheaper. Extension professionals should be cognizant of the new ICTs and use them in their work. Facilitating farmers in marketing their products and educating community members to mitigate the risks of climate changes are other tasks that extension agents are now asked to do. It is difficult for extension professionals to accomplish these tasks on their own. Extension services will be sustainable if they follow a farmer-centered (demand-driven) approach, encourage participation of farmers and other stakeholders in extension processes (participatory), and involve NGOs and farmer cooperatives as extension service providers (pluralistic).

Core Competencies

Today extension professionals are judged on how they serve their clients, whether they listen to their clients, how their rapport is with their clients and how familiar they are with their clients' contexts and issues. Therefore, extension professionals should have mastery of several non-technical or process skills, such as "soft skills (communication skills, critical thinking,

teamwork, entrepreneurship and leadership) as well as practical capacities" (Moore, 2015, p.1). Referencing Bunk (1989), Mulder (2007) presented four core competencies essential for extension professionals: specialized competence (continuity), methodological competence (flexibility), social competence (sociability) and participatory competence (participation). Three out of these four core competencies are process competencies.

Citing Duvel (2007), Zwane (2014) said that, to make AES more effective and/or better serve their clients, the human resources — extension professionals — need to have a mastery of specialized knowledge, and they have to demonstrate professionalism -- i.e., they are skillful and knowledgeable, can evaluate the context and have good rapport with their clients, and clients greatly benefit from their services. Highlighting the importance and urgency for professionalism in extension services, Terblanche (2008) mentioned that professionalism has become the reality, and staff members who practice professionalism keep themselves abreast of current knowledge and skills and are foresighted. Professionalism and core competencies complement each other very well (Mulder, 2014). It can thus be said that professionalism is one of the essential core competencies that extension professionals need.

A number of scholars have studied competencies and/or core competencies (Issahaku, 2014; Tiraieyari, Idris, Uli, & Hamzah, 2010; Wasihun, Kwarteng, & Okorley, 2013) in developing countries. A study by the Ghanaian scholar Issahaku (2014) showed interpersonal relations, communication, personal qualities and technical knowledge dominating most competency frameworks and competency-related literature. Tiraieyari et al. (2010) assessed competencies of Malaysian extension workers in relation to their service to good agricultural practices (GAPs). They found that four competencies—social, cultural, program evaluation and GAP—were predictors of workers' performance. The authors noted that extension workers were not much involved in the human development aspects of their job, including leadership development; rather, they were focusing on technology transfer. This is supported by a study in Bhutan where extension professionals perceive technical competencies more important than other competencies (Rigyal & Wangsamun, 2011). A study by Wasihun, Kwarteng and Okorley (2013)

among Ethiopian extension agents showed that core competency levels of extension agents were lower than their technical competency levels.

Martin and Sajilan (1988) investigated the core competencies in teaching required by agricultural extension professionals and the best time to learn these competencies. Respondents indicated that process-oriented competencies such as method demonstration, developing personal relationships with clients, interpreting the impacts of change, etc., are the most important competencies, and on-the-job and preservice training are the best times to learn these competencies.

Review of the literature suggests that there are linear and positive correlations among training for extension professionals, extension professionals' competencies, and extension professionals' and their clients' performances. Linder (2001) reported a strong relationship between extension managers' perceptions regarding human resource management competencies and their ability to perform human resource management activities. Khalil et al. (2009) reported, "Program planning, implementation and evaluation [competencies] emerged as significant predictors of performance" (p. 444) of extension agents in Yemen. In a study among Korean agricultural extension agents, Chae, Kim, & Lim (2014) found that core competencies such as research and analytical skills, interpersonal skills, strategic instruction, agricultural extension and customer orientation are positively related to agents' performance. Resonating with the above findings are those of Tiraieyari et al. (2010), who conducted similar studies in Malaysia.

As alluded to before, how important technical competency is to extension professionals is being debated. Vandenberg and Foerster (2008) stated that core competencies are distinct from technical knowledge and skills, but when technical and non-technical competencies are combined, services become more effective. Similarly, Moore and Rudd (2004) studied the leadership skills of extension directors and administrators. Their study identified six major leadership qualities: human, conceptual, technical, communication, emotional intelligence and industry knowledge skills. Technical competency was only one of the several competencies.

Program evaluation has received increased attention in core competency studies in both developing and developed countries. Namdar, Rad and Karamidehkordi (2010) assessed professional competencies needed by agricultural and extension staff members and managers in Iran, with a focus on program evaluation. As noted above, Khalil et al. (2009) found that program evaluation and associated competencies enhance staff members' job performance.

There is a large body of literature about core competencies among extension workers based in the United States. In 1999 the Blue Ribbon Commission developed core competencies -- community and social action processes, diversity/pluralism/multiculturalism, educational programming, engagement, information and education delivery, interpersonal relations, knowledge of organization, leadership, organizational management and professionalism -- for North Carolina Cooperative Extension professionals. Other scholars (Cochran, 2009; Ferrell, 2001; Vandenberg and Foerster, 2008; Varner, 2011) also contributed to a great extent in competency studies.

Stone and Coppernoll (2004) mentioned subject matter expertise, organizational effectiveness, developing and involving others, communication, action orientation and personal effectiveness as the six broad categories of core competencies that they deemed important for extension professionals to succeed in their jobs, together with communication and information, professional development planning, learning opportunities and resources, and tracking, integration and accountability.

Varner (2011) explained that, as the world is heading toward a new era, the worldviews of extension professionals are changing. New era extension professionals demand more freedom in their work and their decision making, and they want to contribute something concrete and meaningful to their clients and to their organizations, for which they perceive the need for higher skills, knowledge and competencies.

Seeking input from cooperative extension experts, Harder, Place and Scheer (2010) generated 19 core competencies required by entry-level extension professionals. They recommended an extension program development process with six competencies, core interpersonal skills with nine competencies and an additional four core competencies essential

for extension professionals. Culp, McKee and Nestor (2007) identified 32 core competencies required by 4-H volunteers in cooperative extension services in 12 states in the USA.

Core Competencies for Extension Professionals in Nepal

Adapted from Liles and Mustian (2004), Maddy et al. (2002), Ohio State University (2015), Suvedi (n. d.), Vandenberg and Foerster (2008), and the studies from developing countries in Asia and Africa, core competencies and associated competencies are listed below that Nepal may consider adapting for its extension professionals. However, the need for competencies is context-specific (Mulder, 2014) and culture-specific, and extension education is a lifelong learning process (ECOP, 2002) whose core competencies are subject to change as new situations unfold.

Program planning and implementation. Program planning and implementation are important skills that extension professionals need. In a study done among extension agents, Gibson and Hillison (1994) found program planning rated as the most important competency need. Extension professionals not only have to understand planning and do planning within their organizations, they also have to facilitate their clients in doing the same. It is thus important that extension professionals should be able to:

- Understand policies, programs and strategies of agricultural development.
- Comprehend demographics, economic and human activity systems of the communities they serve.
- Assess the needs of farmers and other stakeholders.
- Identify, acquire and allocate resources to programs according to their priority.
- Establish working relationships with partners.
- Design and implement programs with stakeholders' participation.
- Use appropriate educational design to respond to local learning needs.
- Apply adult learning principles to extension education and training.
- Provide input to and seek feedback from participants/learners/clients.

Communication skills. Communication is one of the pillars of extension because extension professionals have to communicate effectively with their clients and stakeholders. Extension professionals should:

- Know various types and styles of communication and be able to use them.

- Engage in adaptation of new technologies.
- Demonstrate good speaking skills.
- Demonstrate effective listening skills.
- Be able to create concise reports and proposals of their extension programs.
- Select and practice communication tools and methods that suit recipients and their needs.
- Be aware of local dialects and cultures while communicating with clients.

Education and informational technology. The use of appropriate methods, messages and tools of education and information is of paramount importance in extension. Competency of extension professionals will be evaluated on the basis of how familiar they are with various and emerging ICTs and other communication tools and methods and how effectively they use these tools and methods in their routine work. Extension professionals should be able to:

- Use computers for word processing, information access, data storage and analysis.
- Provide information via local radio stations, the Internet and mobile phones.
- Effectively use audiovisual materials for teaching adults.
- Use television and radio to communicate information to clients.
- Design and use educational materials on the basis of clients' needs and contexts.

Leadership. A large number of stakeholders are involved in and/or associated with agricultural services. Extension professionals have the challenge to lead, coordinate and facilitate these diverse stakeholders. Extension professionals should uphold stakeholders' participation and ownership in the programs. Moreover, they should:

- Understand group dynamics, work in a team and encourage teamwork in their organizations.
- Understand basic approaches to conflict resolution.
- Understand facilitation and the role of facilitators.
- Identify major political forces that operate in the communities.
- Use a variety of leadership approaches depending on their work contexts.
- Practice consensus decision making among clients and stakeholders.
- Understand barriers to participation and/or learning.
- Be able to interact successfully with diverse individuals and groups to create partnerships and networks.
- Delegate tasks to staff members.

Diversity, pluralism and multiculturalism. Most developing countries, including Nepal, are home to many races, cultures, religions and ethnicities. Gender-related issues, such as gender disparities in services, are frequently raised in these countries. If extension professionals need to be familiar with the diversities of the communities they serve. Specifically, they should be able to:

- Demonstrate sensitivity to the diverse needs of various cultural groups in the community.
- Engage and enhance the participation of various ethnic and sociocultural groups in extension programs.
- Ensure that women and farmers from rural areas and marginalized groups participate in the extension programs.
- Identify, understand and appreciate the needs of diverse staff members and clients.
- Understand and update diversity and multiculturalism issues.
- Ensure that other service providers (e.g., private sector agencies, NGOs, farmer cooperatives, etc.) collaborate in AES and/or provide extension services to the clients.

Program evaluation and research. Monitoring and evaluation of programs are as important as program planning. Funders and stakeholders are eager to know whether the extension programs yield expected outcomes. Program evaluation is the most studied among the core competencies for extension professionals (Rodgers et al., 2012). Scholars have found program evaluation to be one of the important competencies required for extension professionals (Khalil et al., 2009; Namdar et al., 2010). Extension professionals should have information about what, where, how and when extension programs are delivered and how successful these programs have been. In light of these demands, extension professionals should also:

- Understand theories of monitoring and evaluation.
- Understand and adopt formative and summative evaluations.
- Do regular monitoring of extension programs and services.
- Apply quantitative and qualitative data analysis tools, techniques to analyze and interpret monitoring, and evaluation data.
- Communicate monitoring and evaluation findings to clients—farmers, researchers, educators, line agencies and departments.
- Improve and/or redesign programs on the basis of evaluation results.
- Remain current with extension-related research findings and research approaches.

Extension and organizational management. To deliver extension programs effectively, extension organizations need to function well. Extension professionals should therefore establish structure, organize processes, develop and monitor resources, and lead change to obtain extension outcomes effectively and efficiently (Maddy et al., 2002). They should also:

- Understand and be able to convey information about the vision, mission and goals of the extension services.
- Communicate effectively with staff members and clients.
- Conduct staff appraisal and keep staff members informed of their performance.
- Effectively implement reward and punishment systems in their respective offices.
- Find out staff needs — human resource development and others — and address them.
- Organize staff meetings in a timely manner and seek staff input.

Professionalism. Extension professionals should:

- Have a strong work ethic.
- Be committed to continuous learning and career advancement.
- Have a positive attitude about extension work.
- Be accountable to their clients.
- Adhere to their professional norms.
- Maintain transparency.
- Demonstrate critical thinking and problem-solving skills.
- Be able to work independently.

Technical subject matter expertise. Together with the process skills, extension professionals should be proficient in their subject matter. They should:

- Demonstrate that they have basic knowledge in their discipline.
- Understand the new technology being promoted -- what it is, and why and how it works.
- Be able to educate community members about risks and uncertainties due to climate change, market fluctuations, disasters, etc.
- Refer to and make use of publications, research reports, etc.
- Demonstrate basic knowledge of agribusinesses and help entrepreneurship development among extension clients.

Additional Notes on Core Competencies

Nepal may also want to consider the following points to identify and update the core competencies for its extension professionals.

Agricultural education and training: Preservice and in-service training augments learners' knowledge, skills, attitudes and behaviors. Preservice training is mostly formal, and the training period ranges from a few months to a few years. In-service training can be formal or informal. Training duration, topics, types (in-country, abroad; formal, informal) may affect competencies that learners attain after training. Scholars have explained several problems facing AET in Nepal and elsewhere. Some of the problems related to in-service training mentioned by Eicher (2006), FAO (1997), Paudel, Gill and Rajotte (2013) and Suvedi (n. d.) are changing student demographics, budget limitations, theory-focused training, limited or no interactions with other (international) colleges and universities, and outdated curriculum. These problems indicate the need for better coordination between AET and AES. Understanding how alumni are doing in their respective fields and whether they have perceived the need for additional training remains crucial.

As noted above, how and what students learn in colleges and universities has profound effects on their skills and knowledge, and thus on their competencies. Among the three universities offering tertiary agricultural education in Nepal, two were established in the past five to 10 years. Previously, TU was the only university offering agricultural education. Because of Nepal's proximity to India and because the government of India and other donors have been funding Nepali students to study in India, there could be a significant number of extension professionals who graduated from Indian colleges. There is also a third group of students who attended colleges in countries other than Nepal and India. Are they equally competent in their services?

A study of Nepal's tertiary agricultural education by Robson et al. (1986) studied the strengths of the TU undergraduate agricultural education curriculum and solicited inputs from alumni about the contribution of undergraduate programs to their preparation for carrying out extension services. Even though responses were positive, job learning skills and communication skills received lower ratings than technical knowledge and understanding. Theory-focused teaching and learning was found to be the problem of undergraduate education in the 1980s (Robson et al., 1986). This problem persists in Nepal's AET.

A recent South Asia-based study commissioned by the Asian Development Bank (ADB) and the Australian Aid on Technical and Vocational Education and Training (TVET) program, of which agricultural education and training is the chief component, stated about Nepal's TVET: "Employers asserted that the knowledge, competencies, and work ethic demonstrated by TVET graduates are much lower than they expected owing to the poor quality of training in most training institutions" (ADB, 2014, p. 13). Even though a separate council runs TVET programs, the same bureaucrats guide the tertiary and TVET programs. It is therefore highly likely that tertiary programs are also not that effective in producing competent graduates who can effectively address clients' needs and problems.

In-service training helps staff members with applied knowledge and skills (Merriam, Caffarella, & Baumgartner, 2007). In a study by Lakai, Jayaratne, Moore, & Kistler (2012), they found that extension agents perceived in-service training as the best opportunity to hone their core competencies. However, little is known about the effect of in-service training on competency levels and the relationship between competency levels and staff members receiving in-service training. Competition for resources for education and training is ever high, and funders seek to invest in areas and in whom there is need. Who are in dire need of training? Who are interested in training to improve their competencies? If these questions are answered, then the core competency assessment will be worthwhile.

The importance of preservice education in human resource development, including technical and professional core competencies, is uncontested (Caffarella, 2002; Maguire, 2012). Because teaching and learning depend on several factors — teachers, students, logistics, curriculum and opportunities for hands-on learning — without empirical evidence it is difficult even to guess how good colleges and universities are in helping students acquire their core competencies. The best way to know about the effect of teaching is by soliciting inputs from the consumers -- i.e., the alumni. Do alumni who attended different colleges have the same competency levels? Do alumni of Indian and Nepali universities who are in extension services in Nepal differ in their perceptions of their competencies? These micro-level studies have been lacking in competency studies.

Service providers: NGOs vs. GOs: Non-governmental organizations (NGOs) are increasingly popular in AES, but ensuring the quality of their services remains a challenge. Dhakal (2007) argued that NGOs serve limited populations only, they are donor-centric, and their staff members lack technical capacity. In contrast, in a Nepal-based study, Bhatta et al. (2008) found that NGO staff members had better technical competencies and they helped improve the technical efficiency of farms better than staff members of GOs. Mengal, Mallah, Mirani, and Siddiqui (2012) found that public extension workers in Pakistan lag behind in competencies, and private workers outperform their counterparts in government organizations. In their study based in Ghana, Buadi, Anaman, and Kwarteng (2013) found farmers holding mixed perceptions about the adequacy, availability and timeliness of the supply of AES, and they expressed the need for deeper study of NGOs' services and of comparison of GOs' and NGOs' services.

Lopokoiyit, Onyango and Kibett (2013) studied extension management competency needs of extension professionals (subject matter specialists and field extension workers; private and public extension workers) in Kenya. They found managing finances and budgeting to be the pressing training needs for field extension workers rather than SMSs. Irrespective of their positions and workplaces, extension workers perceive communication skills to be one of the major competencies that they require (Lopokoiyit et al., 2013). Ali, Ahmad, Ali, & Shahzad (2011) examined the perceptions of the professional competencies of extension workers working for private companies in Pakistan. They noticed a discrepancy between farmers' expectations of services and extension workers' perceptions of their competencies. What these studies suggest is that core competencies for extension professionals may vary from place to place because they are contextual.

Sociodemographics: Core competencies in relation to staff members' age, gender, workplace, their service period in extension and the universities they attended, which may be related, have not been fully studied yet. Brodeur et al. (2011) found competency needs for new hires and other existing extension agents varied significantly. They suggested conducting needs assessment on a regular basis, and they advised tailoring training programs according to the felt

needs of the staff members. In addition, a few studies examined the relationships of gender and core competencies among extension professionals. In Ethiopia, Wasihun, Kwarteng and Okorley (2013) found that female respondents gave higher ratings to extension professionals' competencies than male respondents did. In Nigeria, Lahai, Goldey and Jones (1999) found that "The level of awareness, participation, adoption, technical knowledge, satisfaction with the quality of agents' services and credibility of women farmers supervised by female agents were relatively higher than those of women farmers supervised by male agents" (p. 231). Assessing perceptions of the importance of professional competencies related to needs assessment among extension professionals in the United States, Ghimire and Martin (2011) found gender and education as significant but weak predictors in determining respondents' perceptions. Other sociodemographic parameters (age and years of experience of working as extension professionals) did not contribute to the prediction of perceptions. On a similar note, Nepal is facing gender biases in most fields, including farming and public services. There are only a few women staff members in public agricultural services. Women farmers do not have the same access to and control over resources, including training and education, that their male counterparts have. It will be worthwhile to study the relationship between core competencies and the gender of the respondents.

In a study of program evaluation core competencies, McClure, Fuhrman and Morgan (2012) found that extension professionals of different primary program areas and service levels have different competency needs. Those with five years or less experience expressed the need for training on data collection; more experienced professionals desired to learn about data analysis. Similarly, as extension professionals become experienced, their organizational and individual roles and obligations change. Benge, Harder and Carter (2011) assessed the competencies of extension agents before they attained jobs. Brodeur et al. (2011) found that, as workers become experienced, they have a better understanding of their organizations and their clients, and their needs and/or requirements for competencies change. For example, senior workers may have to play more roles in leadership and teamwork.

Nepal is a small country, but it has three distinct ecozones and is rich socioculturally, too. Farmers' need for AES and support from extension professionals may vary with the

ecozones and the sociocultural settings. Consistent with Timmer (1982), who found that extension workers have to be well-acquainted with the communities they serve, a study in Malaysia by Tiraieyari (2009) found that extension workers who were familiar with local cultures were performing better. Culp, McKee and Nestor (2007) found cooperative extension volunteers in four U.S. regions to have significantly different perceived competency levels. Not much is known about how extension professionals differ in their competencies by regions in Nepal and elsewhere, or what the relationship of the extension professionals' ethnicities and their competency levels might be. If the relationships of staff members' ethnicities and their core competencies are known, it will help develop training programs specific to certain communities. The above literature review reiterates the need for defining core competencies for extension professionals and assessing competency levels of core competencies of extension professionals.

Conclusions

Given an important role of agricultural extension services in overall agricultural development, need for competent agricultural professionals in Nepal is ever high. We believe that the above listed core competencies serve as the basis for a larger and in-depth study in Nepal to identify and update the core competencies of its agricultural extension professionals.

Core competency assessment studies have varied highly in methods employed, competencies identifed and world geopolitical regions covered. Most core-competency-related studies have been conducted in the West, especially in the United States. Most studies in the past did not seek stakeholders' perspectives to generate a core competency list before actual surveys were conducted. It is thus highly likely that the competencies that stakeholders considered important might not have been included in the survey. Contexts also have changed since these studies were conducted. For example, technologies have advanced, farmers have new needs and problems, and workers need new skills to address them. In the same vein, "Ways of assessing competencies are not static, and need to be revised to be consistent with current priorities in the discipline, public expectations, current scientific knowledge, and improvements in assessment methodology" (Bashook, 2005, p. 585). It is thus imperative

periodically to assess workers' competencies. On the basis of the results of the assessment, curricula for agricultural training and education have to be reviewed and updated.

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