COMPETENCIES NEEDED IN THE INTERNATIONAL AGRICULTURAL

DEVELOPMENT COMMUNITY: A MODIFIED DELPHI STUDY

A Thesis

by

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ABSTRACT

The field of international agricultural development has steadily increased because of the expanding world population and demand for food. Increased awareness of international development worldwide has increased development and created a push for more accountability in the developed world. As a result, many college programs in international development are beginning to undergo programmatic changes and are reconsidering the philosophy underlying their missions in order to better prepare students for careers in international agricultural development.

The purpose of this research was to produce an inventory of competencies expected of master's degree-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates.

A modified Delphi Technique study was used for this research. A panel of 21 experts from the international agricultural development community participated in three rounds of questionnaires during spring and summer of 2015. Sixteen panelists from round one completed round two and 14 panelists from round two completed round three. Panelists identified 29 competencies deemed necessary for international agricultural development graduates to gain employment; 16 were determined to be critical competencies and 13 were determined to be secondary competencies.

DEDICATION

This work is dedicated to God who has guided me every step of the way and those people who have greatly assisted me through this process.

To my parents Joseph Rivera and Lucille Ramirez, for teaching me to always put my faith and trust in God—may I always remember the values you have both taught me: hard work, humility, perseverance, kindness, and love. I want to give my mother special thanks for all of the love and support she has given me through this endeavor. Without her help, completing this research would have been much harder.

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And most importantly, I would like to thank my husband, Jeremy and children, Julian and Grace for their continuing love, encouragement, and patience. Over the years, these two individuals have had to spend many nights and weekends away from me. It

was their sacrifice that made this possible. Now that this chapter in my life is over, I

look forward to the many exciting plans we have for the future.

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agricultural development programs. I realize participating in this study cut into the panelists' personal time; however, their dedication to seeing this study through completion is testimony we are all working towards the same goal: to produce career-ready master's-degree graduates ready to hit the ground running.

Finally, I am thankful for all of my friends and colleagues, as well as the department faculty and staff, for making my time at Texas A&M University a great experience. A special thanks goes out to my good friend, Lori Costello, who took the time to edit my thesis, and offered assistance throughout this process.

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CHAPTER I

INTRODUCTION

The field of international agricultural development has steadily increased because of the expanding world population and demand for food. In the last half-century, population growth has nearly doubled. Currently, the population is 7 billion and it is predicted that the population will be nearly 9 billion in 2050 (Godfray, et. al., 2010). According to McCalla (1998), the majority of this growth is happening in the developing world where food shortages already exist. Increased population and other factors are further aggravating the world's food shortage. First, there is climate change that has dramatically affected water and soil, which in turn has impacted agriculture. Second, advances in the medical field have lowered mortality rates and increased life spans, further exacerbating population growth. Third, one must consider rising wealth in countries like China and India. New wealth is accompanied by new tastes and changes in diets. Previous to their newfound prosperity, China and India consumed very little meat products, but now these countries have increased their meat intake dramatically (Bopp, 2010). The increased demand for meat has led to increased pressure on agricultural food production resources. All of these factors have led scientists, world leaders, and development organizations to ponder the question: How will enough food be provided to feed 9 billion people?

The World Bank, a leader in poverty alleviation, development, and reconstruction believes that "Agriculture can reduce poverty for 75% of the world's poor

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…" (World Bank, 2014). In 2013, the World Bank committed $8.1 billion to agricultural projects, making them the leading financer of agricultural development in the world (World Bank, 2014). Similar efforts to reduce poverty have been made by The United Nations (United Nations, 2009). In 2000, at the UN Millennium Summit, 147 heads of state and governments, including the United States, developed and approved eight Millennium Development Goals (Gqamane, 2009; MDGs; United Nations, 2009). Six of the MDGs that directly influenced international agricultural development were to eradicate extreme hunger, reduce poverty, reduce childhood mortality, improve maternal health, ensure environmental sustainability, and increase global partnerships for development (United Nations, 2009).

In order to accomplish the MDGs, development organizations have intensely implemented new development projects. The increased awareness of the potential for international development worldwide has increased development efforts, and created a push for more accountability in the developing world. According to Klem (2007), agriculture has become more internationalized; however, "many of the projects undertaken do not appear to be as successful, in spite of significant levels of technical expertise" (p. 210). Over the past 20 years, it is estimated that only one in three expatriate managers sent overseas are able to get a job done right away and to their organizations' satisfaction (Bird & Dunbar, 1991). Similarly, the number of international assignments that fail is between 25% – 50%, which costs employers' between $50,000 – $150,000 in revenue (Bird & Dunbar, 1991; Hogan & Goodson, 1990). Furthermore, the estimated cost of failures at a national level is calculated to be

in the billions of dollars (Bird & Dunbar, 1991). As a result, many international

development college programs are beginning to undergo programmatic changes, and are

reconsidering the philosophy underlying their missions and curricula.

Problem Statement

Competencies expected by potential employers in the international agricultural

development community to gain entry-level development jobs are unclear to academia

and to master's students of international agricultural development. According to Hogan

and Goodson (1991), employees on first-time assignments abroad are frequently ill

prepared for a variety of activities they are expected to perform or they do possess the

skills but are unsure of how to apply them in unfamiliar settings. Employers,

specifically in agriculture, have voiced concern about the shortage of graduates entering

the work force who are adequately trained to perform basic entry-level functions.

Industry professionals have suggested agriculture curricula are out of date and need to be

changed (Kunkel, Maw, & Skaggs, as cited in Graham, 2001).   Strategic partnerships

between higher education and industry are believed to play a major role in better

preparing graduates to enter the workforce (Lankard, 1995). Currently, however, there

are limited data describing industry needs and preferences to assist faculty and

administrators in developing graduate-level international agricultural development

curricula.

Purpose and Objectives

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates. Objectives of the study were:

1. Identify competencies necessary for international agricultural development graduates to gain employment.

2. Identify personal attributes necessary for international agricultural development graduates to gain employment.

3. Identify key life experiences deemed necessary for international agricultural development graduates to gain employment.

4. Propose curricula for graduate-level international agricultural development programs based on findings of this study.

Definitions of Terms

- **International Agricultural Development (IAGD)**, as defined by Clemmons, et al. (2014), is the implementation of programs or projects using any of the 10 agricultural interest areas, as identified by development organizations in an international setting. Clemmons, et al. (2014) also identified 10 broad agricultural development areas, as well as a number of sub-interest areas that

could fall under the broader areas. The broader categories and the sub-interest

areas are listed:

1. Animal agriculture

   a. Animal husbandry

   b. Aquaculture

2. Conservation of natural resources

   a. Environmental conservation

   b. Land and water resources

   c. Soil management

3. Water

   a. Conservation

   b. Wells

   c. Irrigation

4. Agronomy

   a. Dry land and irrigated farming

   b. Seed improvement

   c. Crop improvement and development

   d. Cropping systems and economics

   e. Turf management

   f. Horticulture

5. Public Health

   a. Food sanitation

b. Food processing

c. Nutrition education

6. Food Security

   a. Small holder agriculture

   b. Livelihoods

   c. Nutrition

7. Economic development

   a. Poverty reduction

   b. Community development

   c. Microfinance

   d. Finance

8.

    d. Markets and trade

    f. Agribusiness

9. Commercial Agriculture

    a. Large scale farms and ranches

    b. Packing and processing plants

    c. Feedlots

10. Relief and Developments

    b. Post conflict

    c. Natural disaster

11. Policy

    a. Land tenure

    b. Water rights

- **Development organizations** are institutions that provide assistance to development efforts through funding, labor, research, or any other means of direct or indirect aid. Examples of these institutions include governmental agencies, private for-profit organizations, private not-for-profit organizations, philanthropic organizations, and bi-lateral and multi-lateral organizations.

- **Competencies** are defined as a cluster of related knowledge, attitudes, and skills that are inherent in one's job, correlate with job performance, and can be measured against a performance standard (Parry, 1998). In this study, the

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competencies will include competencies identified by potential international development employers.

- **International agricultural development community** refers to international development professionals employed by development organizations who participated in the study.

- **International agricultural development community identified competencies** are competencies identified by potential employers in the international agricultural development community and are judged to be necessary for obtaining employment in international development positions.

- **International knowledge** includes key concepts, values, and procedures that are instrumental to agricultural development in developing countries (Lindner & Dooley, 2002).

- **Skills** include observable competencies necessary to perform a learned psychomotor act (Maxine, 1997). In this study, potential employers in the international agricultural development community identified such skills.

- **Personal Attributes (PA) or Attitudes** for this study are personal qualities or characteristics of individuals that are an important part of their nature that could directly increase their chances of success in international agricultural development careers.

Assumptions and Limitations of Study

This study has the following limitations:

- Generalizability of the findings is limited to the respondents participating in the study.

- Data provided by potential employers in the international agricultural development community is based on their opinions at the time of the study.

- Although several rounds of choices is intrinsic to a Delphi study, and can lead to general agreement among the panelists, voting may adversely affect the intellectual integrity of the resulting guidelines (Marcinkowsi, 2000).

- The results are determined by a specific number of experts.

- The process is time consuming for both the researcher and panel of experts.

- Communication was via email.

The following assumptions made in this study are:

- The instrument is an appropriate evaluation tool for determining competencies.

- The respondents would be honest in their responses to survey questions.

- The respondents for whom the instruments were intended were the ones who completed the surveys.

- The panel members possessed knowledge of international agricultural development.

- The researcher remained impartial when collecting and analyzing the data.

- Interpretation of data collected correctly reflected that which was intended.

Significance of Study

Part of the rationale for this study was in part due to a week-long High Impact Experience trip taken in the spring of 2014 to Washington D.C. by the researcher and six other graduate students studying international agricultural development. The purpose of the experience was for graduate students enrolled in the course Institutions Serving Agriculture in Developing Nations (ALEC 646) to gain first-hand knowledge about different institutions serving agriculture in developing nation, and broaden their knowledge about careers in international agricultural development. During an intensive week of meetings, the group met with 12 different international agricultural development organizations and spoke with over 50 leaders in the field of international agricultural development about competencies needed to gain entry-level positions in international development. Leaders in the field expressed that academic international agricultural development programs should restructure the curriculum to better match expected competencies by the international agricultural development community. Furthermore, given the recent global surge in international agricultural development, the field leaders communicated there are competencies hiring manager values most when hiring graduate students for international development careers. Moreover, the leaders believe it is the responsibility of academic international development programs to effectively train graduate students for these careers. The results of this research are important to academia to assist in the development and offering of appropriate curricula for IAGD graduate programs. Likewise, the IAGD community will also benefit because the grads that they hire will be better prepared for careers in IAGD.

Organization of Study

Chapter I is organized in eight sections; (a) introduction to the study, (b) statement of the problem, (c) purpose and objectives of the study, (d) definitions and terms, (e) assumptions and limitations, (f) significance of the study, (g) and the organization of the study. Chapter II provides a review of relevant literature and is organized into four sections: (a) competency building, (b) international development competencies, (c) agricultural competencies, and (d) a summary of the literature. Chapter III contains the research method used in this study and is organized into five sections: (a) rationale for the use of the Delphi Technique, (b) development of the Delphi Panel, (c) expert panel characteristics, (d) Delphi rounds, and (e) summary of the method. Chapter IV reports the results of this research and Chapter V provides a summary of the research as well as a discussion, implications, and recommendations for further research.

CHAPTER II

REVIEW OF LITERATURE

Overview

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates.

In Chapter II, a comprehensive overview of the theoretical framework and empirical research relevant to this study is provided. It is organized into four sections: (a) competency building, (b) international development competencies, and (c) agricultural competencies, (d) international graduate programs: a quick overview (e) and a summary of the literature.

Competency Building

Recent trends have shown increased attention given to the skills and competencies needed in the workplace. Nehrt (1993) asserted, "The United States has entered a global era and it is the responsibility of education to prepare people for the world in which they will be living" (p. 81). Likewise, Raudenbush (2000) stated, "Workforce education, school to work, corporate partnerships, and competency-based education are initiatives to make education more relevant to society, and by extension, to

the global economy" (p. 203). According to Baumann et al. (2014), collaboration between industry, education, and government stakeholders to create industry-driven, competency-based education at the local, state, and national levels is growing in popularity, and is a needed educational change.

There were several different models of skills and competencies for various disciplines and for corporate employment (Berdow, & Evers, 2010). The push for competency-based education is largely due to gaps between the higher education preparation of graduates and the expectation of the graduates in the workplace (Cohen, 2003; Doria, Rozanki, & Cohen, 2004).

International Development Competencies

Previous research in the field of international development suggested that there are four widely accepted competencies that employers seek in new employees: (a) technical training, (b) cultural awareness, (c) attitude/behavior, and (d) communication and interpersonal skills (Byrnes, 1972; Hogan & Goodson, 1990; Bird & Dunbar, 1991; Logue, 2001).

Byrnes (1972) emphasized technical skills, asserting that having a special knowledge of an area of study promotes credibility with stakeholders of international projects. However, later works by Gudykunst, Hammer, & Wiseman (1977) did not include technical expertise on their list of competencies, indicating that employees could be taught context-specific technical skills when needed.

According to Gudykunst, Hammer and Wiseman (1977), understanding of different cultures, customs, and values can ease the employee's ability to function in everyday life abroad, and make the transfer of technology and ideas considerably easier. Contrary to this belief, Paige (1986) asserted overemphasizing cultural training could actually hurt an employee by giving a false sense of preparedness.

International development workers' attitudes and behaviors, also known as personal attributes (PA), affected every aspect of daily life when working abroad. According to Hammer, Gudykunst & Wiseman (1979), certain personal qualities or characteristics of international workers affected their overall inability to adjust to new environments and hindered the success of a project. "Traits such as patience, tolerance for ambiguity and uncertainty, and flexibility have consistently been found to be crucial to effective cross-cultural adjustment and job performance (Cui & Awa, 1992, p. 314). Adaptability, optimism, humility and thankfulness, flexibility, and respect are common characteristics named as imperative attitudes and behaviors for international workers to possess (Hammer, Gudykunst & Wiseman, 1979; Chen, 1997; Kealy & Protheroe, 1996).

Communication and interpersonal skills were typically considered the most critical competencies to possess. According to Hogan & Goodson (1991), intercultural effectiveness correlated to high levels of interpersonal skills such as: social interaction, cultural empathy, and personality traits. Being able to speak the native language was another important skill to have. Native language fluency has been found to increase daily interactions, activities, and trusting partnerships between international

development workers and nationals (Hogan & Goodson, 1991; Bird & Dunbar, 1991; Logue, 2001).

Agricultural Competencies

Several agricultural competency-based studies were reviewed, one area noted as weak in many agricultural competency-based studies was international knowledge (Linder, Dooley, & Wingenbach, 2002; Linder & Dooley, 2003). Radhakrisha and Bruening (1994) conceded employees working in agribusiness rated interpersonal, communication, business, and economic skills as most important for students pursuing careers in agribusiness. A cross-national study titled *Agricultural and Extension Education Competencies* found that perceived competency rankings varied by country. However, there was consistency in a cross-national setting indicating that foundations knowledge was ranked highest with the two lowest ranked competencies being teaching strategies and international knowledge (Lindner, & Dooley, 2003). Likewise, Lindner, Dooley, and Wingenbach (2002) established that post-secondary agricultural education students have low levels of international knowledge, which may lead to negative outcomes for students who participate in international development activities.

Undergraduates in the Department of Agricultural Education at Texas A&M University (now Department of Agricultural Leadership, Education, and Communications) were noted to have limited knowledge about international agricultural policies, products, people, and cultures, and were not open to learning more through study abroad programs or international exchange students (Wingenbach, et al., 2003).

According to Wingenbach, et al. (2003), "…additional research is needed to identify appropriate methods for increasing a student's international knowledge throughout the duration of his/her university experience" (p. 33).

International Graduate Programs: A Quick Overview

George Washington University offers seven graduate programs with an international focus. The two programs that are most applicable to this research are the Masters of International Studies (MIS) program and the Masters of International Development Studies (MA) (George Washington University, n.d.).

The MIS program is a 28-credit hour program that combines key theories from political science, economics, and historic issues in international affairs. There is specialized emphasis on applying these theories to global issues or regional studies. Each student must complete 9-credit hours of core field studies in political science, economics, and historic issues in international affairs; 12-credit hours of major field studies in either global issues or regional studies; a 4-credit hour capstone course that is led by a faculty member and closely matches the functional area of their project; and 3-credit hours of electives. The student must also demonstrate proficiency in both English and another modern language (George Washington University, n.d.).

The MA in International Development Studies applies current development theories and issues to formulating policies and implementing development projects. This program requires 40-credit hours. All students in the program must complete 10-credit hours of core courses taken in sequence which integrate theory and policy issues

with actual application. The result of this work is a yearlong capstone project in which students work directly with a development agency in Washington, travel to a field site, and produce a substantive and professional product for a client. In addition, students must complete 12-credit hours of analytical courses, such as economics, policy analysis, methods, and management. Other requirements included 18-credit hours of concentration courses, a 1-credit hour workshop in professional skills, and demonstration of proficiency in both English and another modern language (George Washington University, n.d.).

Similarly, Penn State University offers an International Agriculture and Development (INTAD) program facilitated through the College of Agricultural Science. It is a dual degree that allows qualified students from other programs at Penn State such as: agricultural extension education, agricultural economics, rural sociology, plant pathology, soil science, and entomology to combine their major degree with an internationally-focused program that will allow them to gain global competency skills and study methods applicable to their specific discipline in a global environment (Penn State University, n.d.).

Students seeking an M.S. in International Agriculture and Development are required to submit a thesis and complete a minimum of 12-credit hours in INTAD (400, 500, or 800 level). Nine of the credit hours must be from the core curriculum, which includes a 3-credit hour seminar course, and 6-credit hours must be taken from the Department of Agricultural Economics, Rural Sociology, or Agricultural and Extension

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Education. The remaining 3-credit hours must be taken as an internship or independent study with international development content (Penn State University, n.d.).

Unlike George Washington University and Penn State, UC Davis offered two different M.S. degrees in International Agricultural Development. These two tracts are referred to as M.S.I and M.S.II.   These programs are designed to prepare students for careers in global agricultural and rural development. Both tracks are interdisciplinary in design. Students gain the knowledge and skills necessary to implement, facilitate, and manage programs that improve on agricultural development and rural life (Penn State University, n.d.).

Students are equipped to accomplish a myriad of improvements, such as facilitating innovation in agriculture, natural sciences, and social and economic systems. Students specialize in an emphasis area in agricultural and social sciences. These areas include, but are not limited to agricultural and resource economics, agricultural engineering, agronomy, animal science, anthropology, aquaculture, avian science, community development, gender, geography, horticulture, human nutrition, plant pathology, sustainable agriculture, vegetable crops, and viticulture (Penn State University, n.d.).

A degree in International Development from UC Davis requires 42-credit hours of graduate or upper level courses. There are also 12-credit hours of prerequisites that must be met by the end of the first year. Students are expected to complete 12-credit hours of core courses, 24-credit hours of elective courses, and a thesis or comprehensive exam (UC Davis University, n.d.).

Texas A&M University offered three programs with an international emphasis. The first program offered in the College of Agriculture and Life Sciences. It was a Master's of Science in Agricultural Leadership, Education, and Communications (ALEC) with an emphasis in International Agricultural Development. The other two programs offered by the Bush School of Government and Public Service are a Master's in International Affairs (MIA) and a Master's of Public Service and Administration (MPSA) with a concentration in international non-governmental organizations (Texas A&M College of Agriculture and Life Science, n.d.; Bush School of Governments and Public Service, n.d.).

To earn a Master's of Science in Agricultural Leadership, Education, and Communications at Texas A&M University 32-credit hours plus a thesis are required. Twenty credit hours must be completed in the department and 12-credit hours may be from another department in a supporting field. The degree plan only specifies three courses that must be taken: a 1-credit hour seminar course, at least 6-credit hours of course work in advanced research (statistics or basic quantitative of qualitative), and at least 4-credit hours of research. The department offered four 3-credit hour courses that focused on international agricultural development. Students seeking a concentration in International Agricultural Development focused on developing knowledge, experience, and scholarly competence, as well as performing service in activities that enrich agricultural development and education internationally. Students are familiarized with trends, tasks, roles, responsibilities, and preparations needed for development work in development nations. An important part of the curriculum is cross-cultural awareness

and cultural sensitivity. Students in the program learn both formal and informal

agricultural and natural resource programming (Texas A&M College of Agriculture and

Life Science, n.d.).

Similarly, the Master of International Affairs degree offered through the Bush

School of Government and Public Service prepare students for careers in global affairs.

According to the Bush School of Government and Public Service's website, the

curriculum gives students a working knowledge of analytical skills in diplomacy,

international politics, regional studies, intelligence, and international economic

development. Students attend comprehensive seminars on international issues, enroll in

study abroad courses, and engage in language immersion, leadership, and exchange

programs which prepare them for careers in international affairs (Bush School of

Governments and Public Service, n.d.).

Students seeking a Master's degree in International Affairs must complete 48-

credit hours of course work (Bush School of Governments and Public Service, n.d.).

Each student is required to complete 18-credit hours of core courses, 15-credit

hours of electives, a summer internship or an intensive language and cultural study, 15-

credit hours of concentration courses or electives, and a capstone course. The capstone

course gives the students the opportunity to tackle a real problem or project by working

with a governmental agency or nonprofit organization. This is the final test designed to

measure the knowledge and abilities the students have gained through the program

(Bush School of Governments and Public Service, n.d.).

To achieve a Master's of Public Service and Administration degree, the students must complete a 48-credit hour program designed to increase leadership in both public and nonprofit sectors. Students enrolled in this program are taught the tools and knowledge needed to perform effectively and ethically. The program is accredited by the National Association of Schools of Public Affairs and Administration. The curriculum is designed to teach students analytical skills in management, leadership, policy analysis, and research methods. The program provides students with many opportunities to get involved in public service and to develop leadership skills, both inside and outside the classroom through engagement with high-level public leaders, real-world consulting projects, student organizations, and the School's Public Service Leadership Program (Bush School of Governments and Public Service, n.d.).

According to the Bush School of Government website (n.d.), students in the Public Service and Administration Master's program must select a track in public management (PMP), nonprofit management (NPM), or public policy analysis (PPA). They are also encouraged to select an elective concentration in one of the following areas: nonprofit management; energy, environment, technology policy and management; state and local policy and management; security policy and management; health policy and management; or international nongovernmental organizations. Alternatively, they may design an individualized concentration with their adviser. Those who choose International Non-Governmental Originations (INGO) for their concentration will gain comprehensive knowledge on the various functions INGOs perform, how they are

structured, the environment in which they operate, and the challenges of management they may confront (Bush School of Governments and Public Service, n.d.).

According to the Master of Public Service and Administration course catalog (n.d.), students must complete 21-credit hours of core courses in analytical skills in management, leadership, policy analysis, and research methods; 18-credit hours of approved electives; 6- credit hours of track courses; and 3- credit hours for a capstone course. In addition, students lacking professional experience will be asked to participate in an internship in the summer between their first and second years (Bush School of Governments and Public Service, n.d.).

Summary

To summarize, international agricultural development degrees from the universities researched for this study offered an all-inclusive curriculum and perspective, and prepared students for careers in international agricultural development with a broad knowledge base. The paradox of specializing in one specific area and too little in others has been ever-present in many seeking to work in international development (Brinkman, Westendorp, Wals, & Mulder, 2007). No one competency can adequately stand alone to ensure successful projects or employees. It is the systematic blend of competencies, personal attributes, and life experience that subsequently make an employee successful.

As mentioned previously, there have been many competency-based studies on agriculture and international development, but there have not been any that focus

specifically on international agricultural development. It was my goal as the researcher

to help fill this gap.

CHAPTER III

METHODOLOGY

This chapter provides descriptions of the research procedures and method that was used in this research study. It is organized into five sections: (a) rationale for the use of the Delphi technique, (b) development of the Delphi panel of experts, (c) expert panel characteristics, (d) the Delphi rounds, and (e) summary of methodology.

The research method chosen for this study was the Delphi technique (Dalkey, 2002; Linstone & Turoff, 2002; Weaver, 1971). In selecting the method for the study, two key factors were considered. First, current research on the topic was limited, yet the demand for informed competencies was great. Second, individuals most knowledgeable about the subject were widely dispersed across organizations and geographies. Therefore, a systematic approach to inquiry was needed to collect informed opinions in a timely manner, transcend organizational and geographical boundaries in a cost-effective manner and examine the data in a pragmatic way.

Rationale for the Use of the Delphi Technique

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates. The Delphi study consists of questioning responses, developing a summary, and providing feedback to obtain consensus, the method seeks to gain the most

reliable consensus of opinions from a group through a progression of intensive questionnaires with constrained feedback (Dalkey, 2002; Linstone & Turoff, 2002; Weaver, 1971). The data collection method for the Delphi study stood out from other group data collection methods in three ways: anonymity, interaction with controlled feedback, and statistical group response (Snyder-Halpern, Thompson, and Schaffer, 2000).   Generally when using the Delphi study method researchers identify experts through publications or known positional leaders that have firsthand relationships with the subject matter (Ludwig, 1994). Once panelists are selected, the researcher used a series of "rounds." A feedback process permits the selected panelists to reevaluate their initial judgements on the information that was previously provided in an anonymous environment. This is process is depicted in Figure 1.
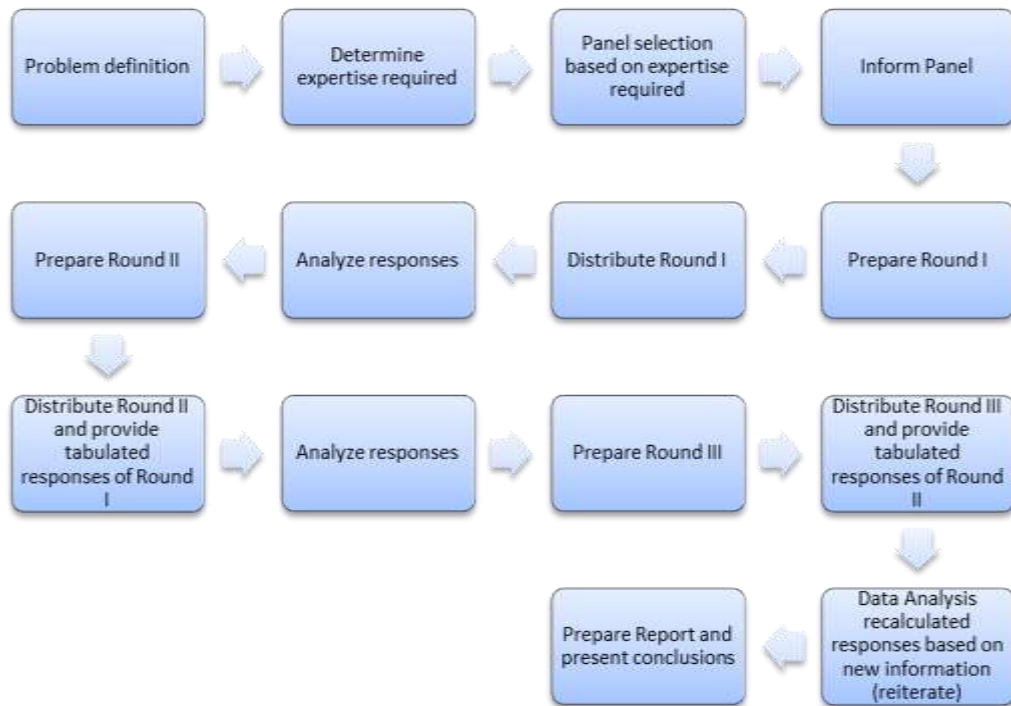
Figure 1*: Delphi Process Flowchart*

The Delphi technique is a straightforward approach for carrying out research in the area of forecasting and building consensus. Nevertheless, researchers must fully consider the limitations connected with the Delphi study before making a final decision to use it. According to Linstone and Turoff (2002), there are five reasons a Delphi study could be unsuccessful:

1. Imposing views and preconceptions of a problem upon the respondent group by over specifying the structure of the Delphi study and not allowing for contribution of other perspectives related to the problem.

2. Assuming that the Delphi study can be a surrogate for all other human communications in a given situation.

3. Poor techniques of summarizing and presenting the group responses and ensuring

common interpretations of the evaluation scales utilized in the exercise.

 4. Ignoring and not exploring disagreement that causes discouraged dissenters to drop

out and which, in turn, cause an artificial consensus to be generated.

5. Understanding the demanding nature of a Delphi study and the fact that the

respondents should be recognized as consultants and properly compensated for their time

if the Delphi study is not an integral part of their job function.

Other disadvantages of using a Delphi study include (Barnes as cited in Yousef,

2007):

1. Judgments are those of a selected group of people and may not be representative of

the population.

2. Tendency to eliminate extreme positions and force a middle-of-the-road consensus.

3. More time-consuming than the nominal group process.

4. Should not be viewed as a total solution.

5. Requires skill in written communication.

6. Requires a significant amount of time and commitment from participants, e.g., 30 to

45 days to complete the process.

After intense review of both the pros and cons of using the Delphi study as a

research method, the Delphi study was a preferred choice for research based on a pooled

consensus (Moore, as cited in Jackson, 2000). Likewise, Linstone and Turoff (2002)

stated that the Delphi technique has the ability to capture collective intelligence about

the subject giving the group the ability to produce a much better quality result than could

have been accomplished by an individual in the group acting alone. Using a Delphi

study in a quantitative design with descriptive statistics has been a commonly used

method within social science fields and has been used to create competency models for

different professions and for curriculum development, (Schinn, et. al., 2009, MClagan

1997; Rothwell 1996). An intensive review of Linstone and Turoff's (2002) procedural

recommendations was made in order to address limitations of the Delphi study. The

following adjustments were made to increase the quality and rigor of the study:

1. Creation of the expert panel was purposive. Leaders that the researcher had met
   in Washington D.C., when visiting different institutions serving international
   agricultural development. These leaders were asked to participate because they
   have expertise in the field and are very well connected. They were then asked to
   provide recommendations for additional panelists who fit the criteria.

2. Motivation to participate in the study was provided by offering a copy of the
   complete research to all participants.

3. Time commitment was established at the outset of the study.

4. A close-ended, pre-established questionnaire was used in the first round instead
   of the traditional open-ended. This allowed the researcher to pre-verify the face
   and content validity of the instrument in advance. According to McCampbell
   and Stewart (1992) using a pre-established set of statements in the first round has
   several advantages such as: saving time, cutting down dropout rate, and assuring
   that important statements are included by the researcher.

5. Standardized scales (Likert) was used in rounds one and two so that respondents could qualify responses to specific questions. In round three respondents were asked to rank order three grouping of competencies.

6. Descriptive statistics were used to define consensus at a numerical level and were then summarized and presented to the respondents in each round.

Development of the Panel

Panel selection plays a crucial part in the quality of the results generated (Hsu & Sandford, 2007). According to Scheele (as cited in Jackson, 2000), there are three different types of panelists: stakeholders, experts, and facilitators. Stakeholders are those who are directly affected by the study. Experts are those who possess a specific knowledge and in-depth experience with the topic being researched. Facilitators are those who are skilled in clarifying and summarizing views being expressed and offer alternate views as appropriate. For the purpose of this study it was determined that the *expert* panel was the best choice.

The suggested size for a panel in a Delphi study is to be not less than 10 and no more that 30 (Linstone & Turoff, 2002). A total of 21 participants sat on the panel for this study.

Expert Panel Characteristics

Currently, there are no criteria for expert panel selection. Therefore, to guide the selection of panelists for the Delphi study, I targeted individuals with similar

backgrounds and experiences concerning the topic and were capable of contributing helpful inputs and willing to revise their initial or previous judgments for the purpose of reaching consensus (Hsu & Sandford, 2007). The panel was composed of 21 experts from the international agricultural development community. Panel experts included representatives from governmental agencies, private for-profit organizations, private not-for-profit organizations, and multi-lateral organizations. The panel was selected purposively from a pool of experts the researcher had met in Washington D.C., when visiting different institutions serving international agricultural development the panelists selected were asked to provide recommendations for additional panelists willing to lend their expertise to this study.

Once potential panel members were identified, an e-mail (Appendix A) was sent on April 17, 2015 to 30 potential panel members with a description of the study and a request for their participation. The panelists were asked to respond within three days. . According to Hasson, Keeeny, and Mckenna (2000), using a large sample size can generate a greater amount of data for analysis, which can lead to difficulties with the analysis. In order to keep the amount of data collected manageable, and maintain reliability by keeping 13 participants engaged through all three rounds, a sample size of 21 was selected. Anticipating attrition in each round, the sample size of 21 was selected to maintain a 70% response rate that is required for each round of the study (Linstone & Turoff, 2002). The population selected was designed to get a cross flow of opinions between entry-level, mid-level, and senior-level experts working in international

agricultural development.

Delphi Study Rounds

Data were collected from international agricultural development experts during the spring and summer of 2015. The study was composed of a cross flow of experts working in international agricultural development in entry-level, mid-level, and senior-level positions, representing four different sectors: governmental agencies, private-for-profit organizations, private not-for-profit organizations, and multi-lateral organizations. The initial population of the panel was 21, with 14 panelists completing all three rounds. The results of the data collected are reported in Chapter IV.

 Each questionnaire included an information sheet (Appendix B). Round one was a pre-established questionnaire based on the literature, related competency models, and input that the researcher gathered previously in Washington D.C., from experts representing twelve international development organizations (Appendix C). Panel members asked to respond within 14 days for each round via online questionnaires.

Responses from round one were grouped together for analysis and returned to the panel members in the second round. Using the information gathered in round one from panel members, the researcher value rated the input into three categories: *importance*, *frequency*, and *criticality* using a numerical scale. Numerical data input was then summarized using graphs and was included with round two. Questions that had reached consensus in round one were not included in round two. The panel members were then asked to rate competencies again after reviewing the responses of the other panel

members. Using the information gathered in round two from panel members the researcher again value rated the input into three categories: *importance*, *frequency*, and *criticality* using a numerical scale. Numerical data input was then summarized using graphical representation of data and was included with round three. In round three participants were asked to rank order three competency clusters: international agricultural development cluster, language cluster, and life experience cluster by order of importance. This was done not to come up with a consensus, but to find out how each competency within a cluster was prioritized by panelists.

Summary of Methodology

This chapter described the methodology that was used for this research. It was determined that the Delphi study is the best method to use when conducting consensus research. A quantitative design with descriptive statistics was chosen because it is commonly used to create competency models and for curriculum development. A panel of experts in international agricultural development was chosen because of their experience and knowledge on the subject matter. There were a total of three rounds sent via e-mail to a total of 21 panelists over the spring and summer of 2015.

CHAPTER IV

RESULTS

Analysis of the Data

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates. Objectives of the study were:

1. Identify competencies necessary for international agricultural development graduates to gain employment.

2. Identify personal attributes necessary for international agricultural development graduates to gain employment.

3. Identify key life experiences deemed necessary for international agricultural development graduates to gain employment.

4. Propose courses for graduate-level international agricultural development programs based on findings of this study.

Research question one, two, and three were answered in round one and two of this study. For round one, 21 panel members were e-mailed a Qualtrics survey link to survey one. An information sheet was included within the online questionnaire in each round (Appendix B). Round one was a pre-established questionnaire based on the literature, related competency models, and input I gathered from experts representing

twelve international development organizations located in Washington D.C. Included in round one were demographic questions as seen in Table 1. Round one questionnaire and email communications are found in Appendix C. Panel members were asked to respond within 14 days.

Of the 21 panelists, 12 (57%) were male and nine (43%) were female. Four development sectors were represented by panelists; the highest percentage represented was from the governmental sector (67%). Private not-for-profit represented 24% and the lowest percentages represented were from the private-for-profit and multi-lateral sectors, with 5% each.

Eleven different job functions were represented by panelists including: Development Coordinator/Program Coordinator, Project Manager, Program Specialist, Program Manager, Program Officer, Director, Training Specialist, Foreign Service Officer, Senior Policy Analyst, Change Management, and one not specified.

Sixteen panelists (76%) of the panelists had master's degrees, four of the panelists (19%) had a Ph.D., and one (5%) panelist had a bachelor's degree. Seven different disciplines were represented. There were 12 panelists with degrees in International Agricultural Development representing the highest percentage of the panelists with (57%). There were four panelists with degrees in International Development (10%) and two panelists with degrees in International Affairs (10%). Four panelists (19%) had degrees in other disciplines such as: Public Health Nutrition/Agricultural Policy, Natural Resource and Development, Agricultural Education, and Rangeland Management.

Ten (48%) of the panelists have worked in different occupations in international development for 2-6 years; five (24%) of the panelists have worked in an international development occupation for 7-14 years, and six (28%) panelists have worked in an international development occupation for 15 years or more.

Table 1

Demographic description of Delphi panel

	#	%
Type of development organization		
Governmental	14	67
Private for-profit	1	5
Private not-for profit	5	24
Multi-lateral	1	5
Job title		
Development coordinator/program coordinator	1	5
Project Manager	2	10
Program Specialist	4	19
Program Manager	6	29
Program Officer	1	5
Director	2	10
Other	5	24
Training Specialist	1	
Foreign Service Officer	1	
Senior Policy Analyst	1	
Change Management	1	
Not Specified	1	

Table 1 Continued

	#	%
Highest Level of Education		
Bachelor's Degree	1	5
Master's Degree	16	76
Ph.D.	4	19
Area of Degree		
International Affairs	2	10
International Development	3	14
International Agricultural Development	12	57
Other Degrees	4	19
Other Degrees Specified		
Public Health Nutrition: Agricultural Policy	1	
Natural Resources and Environment	1	
Agricultural Education	1	
Rangeland Management	1	
Number of years working in international development career		
2-6 years	10	48
7-14	5	24
15+	6	28

Table 1 Continued

Panelists	Region	Organization	Occupation Title
1	North Africa & the Middle East	Norman Borlaug Institute	Regional Director
2	Middle East	Norman Borlaug Institute	Program Coordinator
3	Latin America	Center on Conflict and Development	Program Manager
4	DR Congo	Center on Conflict and Development	Program Coordinator
5	Zambia	ACDI/VOCA	Chief of Party
6	Washington D.C.	ACDI/VOCA	Social Behavior & Change Specialist
7	Washington D.C.	ACDI/VOCA	Associate Director of Agriculture
8	Washington D.C.	Chemonics	Agriculture & Food Security Practice Associate
9	Washington D.C.	USDA Foreign Agricultural Service (FAS)	Foreign Agricultural Affairs Officer
10	Washington D.C.	USDA FAS	International Agriculture Development Specialist
11	Washington D.C.	USDA FAS	International Program Specialist
12	Washington D.C.	USDA FAS	International Trade Specialist
13	Washington D.C.	USDA FAS	Agricultural Project Manager
14	Washington D.C.	USDA FAS	Agricultural Market Specialist
15	Washington D.C.	USAID	Senior Agriculture Development Advisor
16	Washington D.C.	USAID	Training Coordinator
17	Washington D.C.	USAID	Agriculture Officer
18	Washington D.C.	USAID	Knowledge Management Specialist

Table 1 Continued

Panelists	Region	Organization	Occupation Title
19	Washington D.C.	Food & Agriculture Organization of the UN (FAO)	Junior Consultant, Gender & Rural Advisory Services
20	Tokyo Japan	Table for Two	Program Officer
21	Washington D.C.	RTI International	Sr. Food & Agriculture Specialist

Round one was grouped into three competency clusters: International agricultural development competencies, personal attributes, and life experiences. Study participants were asked to value rate each competency using a five-point Likert-type scale shown in Table 2.

Table 2

Key importance rating

Scale	Level of Importance
1	Not Important
2	Of Little Importance
3	Moderately Important
4	Very Important
5	Extremely Important

Competencies meeting/not meeting criteria are shown in Tables 3, 4, 5, and 6. In order for a competency to achieve consensus, it had to have a combined percentage of 66.7% of the experts answering 4 or 5. A total of 16 competencies reached consensus in

round one: six competencies from the international agricultural development cluster, all nine competencies from the personal attributes cluster, and one competency from the life experience cluster.

Table 3

IAGD competencies meeting criteria round 1

Competency	Response Meeting Criteria (N=21)	% Agreement marked 4 or 5
Project management	17	81
Program design	17	81
Communication	21	100
Technical expertise	14	67
Leadership	15	72
Decision making	16	76

Table 4

IAGD competencies not meeting criteria round 1

Competency	Responses Not Meeting Criteria (N=21)	% Agreement marked 4 or 5
Program/project monitoring & evaluation	12	58
Contracting	10	48
Business knowledge	8	40
Awareness of international agricultural development industry	13	62
Grant writing	10	47
Budget management	12	76
Consulting	10	48

Table 4 Continued

Competency	Responses Not Meeting Criteria *(N=21)*	% Agreement marked 4 or 5
Language fluency	13	62
Spanish fluency	7	35
French fluency	8	38
Arabic fluency	3	15
Portuguese fluency	2	10
Swahili fluency	4	20
Change management	11	53

Table 5

PA competencies meeting criteria round 1

Competency	Responses Meeting Criteria *(N =21)*	% Agreement marked 4 or 5
Cultural sensitivity	20	95
Knowledge and creativity	18	86
Ethics and integrity	19	91
Planning and organizing	19	90
Team player	19	90
Adaptability and flexibility	20	95
Positive attitude	17	81
Interpersonal relationship building and collaboration	18	86
Resilience	20	100

Table 6

Life experiences not meeting criteria round 1

Competency	Responses Meeting/Not Meeting Criteria *(N =21)*	% Agreement marked 4 or 5
Meeting Criteria		
Internships with a development organization	15	71
Not Meeting Criteria		
Faculty-led study abroad	3	15
Short-term study abroad	6	29
Long-term study abroad	9	43
Volunteer programs abroad	10	47
Peace corps	14	66
Internships on farms or ranches	8	38

Round one data was analyzed and included with round two. Round two questionnaire and email communications are found in Appendix D. Questions that reached consensus in round one were omitted from round two. Panelists were then asked to view and consider other panelists' responses compared to their own and move towards consensus of opinion on individual ratings that were outliers from the group rating before completing round two. This round gave panelists a chance to revise their previous judgments. Sixteen panelists from round one completed round two of the study. This provided a response rate of 76.9%. There were no new competencies rated with a 4 or 5 that gained congruency in round two, but there were secondary competencies that gained agreement with answers rated 3, 4 or 5 and mean value above 3.00 (moderately important) as seen in Table 7 and 8.

Table 7

IAGD secondary competencies meeting criteria round 2

Competency	Responses Meeting Criteria *(N =16)*	Mean Value	% Agreement marked 3,4 or 5
Meeting Criteria			
Project/program monitoring and evaluation	13	3.64	93
Contracting	12	3.36	85
Business knowledge	10	3.07	71
Awareness of international agricultural development industry	14	3.62	84
Grant writing	12	3.43	89
Budget management	13	3.64	93
Consulting	10	3.14	72
Change management	10	3.21	71
Language cluster			
French fluency	11	3.36	79
Life experience cluster			
Long-term study abroad	12	3.5	86
Volunteer programs abroad	13	3.71	93
Peace Corps	13	3.64	93
Internship on farms or ranches	11	3.21	79

Table 8

IADG secondary competency not meeting criteria round 2

Competency	Not Meeting Criteria (N =16)	Mean Value	% Agreement marked 3,4 or 5
Not Meeting Criteria			
Language fluency cluster			
Language fluency	9	3.07	67
Spanish fluency	10	2.93	71
Arabic fluency	6	2.5	43
Portuguese fluency	2	1.86	14
Swahili fluency	8	2.71	57
Life experience cluster			
Faculty-led study abroad	7	2.43	50
Short-term study abroad	8	2.64	57

Sixteen secondary competencies gained consensus in round two: eight competencies from the international agricultural development competency cluster, one from the language cluster and four from the life experiences cluster. Round two data was analyzed and included with round three.

Fourteen panelists from round two participated in round three, but two of the panelists did not complete round three in its entirety; therefore, the response rate was 75%. In round three respondents were asked to rank three grouping of competencies in order of importance: international agricultural development, language, and life experience. Round three questionnaire and email communications are in Appendix E. The personal attribute cluster was not included in this round because all of the competencies in the personal attribute cluster were deemed critical in round one; therefore, no personal attributes were considered secondary competencies. Asking

panelists to rank in order of importance was done to find out if the order the

competencies were ranked (primary or secondary competencies) matched the order of

importance established in round one and two. The scale of ranking is listed in Tables 9

and 10.

Table 9

IAGD cluster & language cluster importance ranking

Scale	Level of Importance
1	Critical
2	Extremely Important
3	Moderately Important
4	Somewhat important
5	Of Little Importance

Table 10

Life experience cluster importance ranking

Scale	Level of Importance
1	Critical
2	Extremely important
3	Very important
4	Moderately important
5	Somewhat important
6	Of little importance
7	Not important

In round three, the frequency was used with the mean to rank order each competency cluster. In the international agricultural development competency cluster one, budget management was ranked number one with a mean of 2.31. Program design ranked number two with a mean of 2.38; contracting ranked three with a mean of 3.31, grant writing ranked four with a mean of 3.46 and monitoring and evaluation ranked five with a mean of 3.54 displayed in Tables 11 and 12.

Table 11

IAGD #1 response frequencies ranking round 3

#	Answer	1	2	3	4	5	Total Responses (N =14)
1	Program Design	7	0	1	4	1	13
2	Contracting	2	3	1	3	4	13
3	Budget Management	2	7	2	2	0	13
4	Monitoring & Evaluation	1	2	4	1	5	13
5	Grant Writing	1	1	5	3	3	13
	Total	13	13	13	13	13	

Table 12

IAGD #1 statistics ranking round 3

Statistics	Program Design	Contracting	Budget Management	Monitoring & Evaluation	Grant Writing
Min Value	1	1	1	1	1
Max Value	5	5	4	5	5
Mean	2.38	3.31	2.31	3.54	3.46
SD	1.61	1.55	0.95	1.39	1.44
Total Response	13	13	13	13	13

Budget management ranked number one in round three, which was higher than it was rated by panelists in rounds one and two. Program design ranked two, which was slightly lower than what it rated in round one; in round one it reached consensus with a critical rating. Contracting ranked three, which was slightly higher than it was rated by panelists in round one or two. Lastly, grant writing ranked four and monitoring and evaluation ranked five. In rounds one and two these two competencies were switched, with monitoring and evaluation rated higher than grant writing.

In the international agricultural development competency cluster two, consulting ranked number one, with a mean of 2.31 which was much higher than it had been rated in previous rounds and awareness of international agricultural development industry ranked two, with a mean of 2.46 which was consistent with round one and two. Technical expertise ranked three, with a mean of 3.00, which was lower than what panelists had rated in previous rounds. Business knowledge ranked four with a mean of 3.31, and language fluency ranked least important with a ranking of five and a mean of 3.92, both rankings of four and five were found consistent with what panelists had rated competencies in rounds one and two, as seen in Table 13 and 14.

Table 13

IAGD #2 response frequencies ranking round 3

#	Answer	1	2	3	4	5	Total Responses (N =14)
1	Language fluency	0	1	4	3	5	13
2	Consulting	5	4	0	3	1	13
3	Business Knowledge	1	4	2	2	4	13
4	Awareness of IAGD Industry	5	1	4	2	1	13
5	Technical Expertise	2	3	3	3	2	13
	Total	13	13	13	13	13	

Table 14

IAGD #2 statistics ranking round 3

Statistics	Language fluency	Consulting	Business Knowledge	Awareness of IAGD Industry	Technical Expertise
Min Value	2	1	1	1	1
Max Value	5	5	5	5	5
Mean	3.92	2.31	3.31	2.46	3
SD	1.04	1.44	1.44	1.39	1.35
Total Response	13	13	13	13	13

In the language competency cluster, the ability to speak French fluently ranked number one, with a mean of 1.42, which was consistent with what panelists rated it in previous rounds. Spanish language fluency ranked two, with a mean 2.33, which was rated similarly in both round one and two by the panelists; Swahili language fluency ranked three, with a mean of 3.17 slightly higher than panelists had judged in previous

rounds; and Arabic language fluency ranked four, lower than it had been rated in

previous rounds by panelists. Portuguese language fluency was ranked five, the least

important, which was consistent with panelists' judgement in previous rounds. See

Tables 15 and 16.

Table 15

Language response frequencies ranking round 3

#	Answer	1	2	3	4	5	Total Responses (N =14)
1	Spanish	4	4	2	0	5	12
2	French	7	5	0	0	1	12
3	Arabic	0	1	6	4	4	12
4	Swahili	1	2	4	4	1	12
5	Portuguese	0	0	4	4	2	12
	Total	12	12	12	12	12	

Table 16

Language statistics ranking round 3

Statistics	Spanish	French	Arabic	Swahili	Portuguese
Min Value	1	1	2	1	4
Max Value	5	2	5	5	5
Mean	2.33	1.42	3.42	3.17	4.67
SD	1.44	0.51	0.79	1.11	0.49
Total Response	12	12	12	12	12

In the life experience cluster, rankings one and two were found consistent with

panelists' judgments in previous rounds, internships with a development organization

ranked number one, with a mean of 1.93 and Peace Corps ranked two, with a mean of

2.50. Long-term study abroad ranked three, with a mean of 3.50, higher than what it was

rated in round two. Volunteer programs abroad ranked four, with a mean of 3.64 slightly

lower than what panelists rated it in round two. Short term study abroad ranked five,

with a mean of 5.07, higher than what it was rated by panelists in round two. Internships

on farms or ranches ranked six, with a mean of 5.29, lower than what panelists rated it in

round two, and faculty-led study abroad ranked the lowest with a seven ranking, with a

mean of 6.07 which was consistent with panelists' previous judgments. See Tables 17

and 18.

Table 17

Life experience response frequencies ranking round 3

#	Answer	1	2	3	4	5	6	7	Total Responses (N =14)
1	Short-term study abroad	0	1	1	2	3	6	1	14
2	Long-term study abroad	1	3	4	2	3	0	1	14
3	Volunteer programs abroad	1	3	4	2	3	1	1	14
4	Peace corps	7	1	3	1	0	1	1	14
5	Internship with a development org	5	6	2	1	0	0	0	14
6	Internships on farm/ranch	0	0	1	4	3	2	4	14
7	Faculty-led study abroad	0	0	0	1	3	4	6	14
	Total	14	14	14	14	14	14	14	14

Table 18

Life experience statistics ranking round 3

Statistics	Short-term study abroad	Long-term study abroad	Volunteer programs abroad	Peace Corps	Internship with a development org	Internships on farm/ranch	Faculty-led study abroad	Total Responses *(N =14)*
Min Value	2	1	1	1	1	3	4	14
Max Value	7	7	7	7	4	7	7	14
Mean	5.07	3.5	3.64	2.5	1.93	5.29	6.07	14
SD	1.38	1.61	1.69	1.99	0.92	1.38	1	14
Total Responses	14	14	14	14	14	14	14	

Panelists were also asked in round three what they would do with a final competency model based on this research. They were given five options to rank in order of importance, with one being the most likely and five being the least they would do with a competency model. The mean was used to rank their answers in order of importance because there was no congruency reached. The number one ranking was passing it on to recruiting with a mean of 2.54. There were two choices that had the same mean of 2.69, using it as a training tool and recommending it to hiring managers, but using it as a training tool had a lower standard deviation of 1.18 therefore it was ranked two and recommending it to hiring managers was ranked three. Benchmarking my skills ranked four, with a mean of 2.92, and I would do nothing ranked five, with a mean of 4.15. See Table 19.

Table 19

Final competency model statistics

Statistics	Benchmark my skills	Recommend it to Hiring Managers	Use it as a training tool	Pass it on to recruiting	I would do nothing
Min Value	1	1	1	1	4
Max Value	5	5	4	5	5
Mean	2.92	2.69	2.69	2.54	4.15
SD	1.26	1.4	1.18	1.51	1.52
Total Response	13	13	13	13	13

Based on the data collected, 29 competencies were identified, 16 critical competencies, and 13 secondary competencies were identified. Seven critical competencies were from international agricultural development cluster, nine from the personal attribute cluster, and one from life experiences. Secondary competencies were comprised of eight competencies from the international agricultural development cluster, one from the language cluster, and four from life experience cluster.

CHAPTER V

RECOMMENDATIONS AND CONCLUSION

Summary

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce career-ready graduates. Objectives of the study were:

1. Identify competencies necessary for international agricultural development graduates to gain employment.

2. Identify personal attributes necessary for international agricultural development graduates to gain employment.

3. Identify key life experiences deemed necessary for international agricultural development graduates to gain employment.

4. Propose courses for graduate-level international agricultural development programs based on findings of this study.

Additionally, an effort was made to rate the level of importance by first identifying critical competency versus secondary competencies, and then value rank competencies in order of importance.

It was determined that the Delphi technique is the best method to use when conducting consensus research. A quantitative design with descriptive statistics was

chosen because it is commonly used to create competency models and for curriculum development. A panel of experts in international agricultural development was chosen because of their intelligence and knowledge on the subject matter. There were a total of three rounds sent via e-mail to a total of 21 panelists over the spring and summer of 2015.

In round one, the criticality round, competencies were grouped into three clusters based on the objectives set for this study: international agricultural development competencies, personal attributes, and life experiences. Expert panelists were asked to value rate each competency using a five-point Likert-type scale. In order for a competency to achieve consensus, it had to have a combined percentage of 66.7% of panelists answering 4 or 5. A total of 16 competencies reached consensus in round one: six competencies from international agricultural development cluster, all nine competencies from personal attributes cluster, and one competency from the life experience cluster.

In round two sixteen panelists from round one participated and completed the round; this provided a response rate of 76.9%. In round two there were no competencies that gained congruency with a 4 or 5 rating, but there were 16 secondary competencies that gained congruency with answers rated 3, 4 or 5 and mean value above 3.00 (moderately important). Secondary competencies were comprised of: six competencies from international agricultural development cluster, nine competencies from personal attributes cluster, and one competency from the life experience cluster.

Fourteen panelists from round two participated in round three, the ranking round. Two of the 16 panelists did not complete round three in its entirety, therefore the response rate was 75%. In round three respondents were asked to rank order three groupings of competencies by order of importance: international agricultural development, language, and life experience as seen in (Appendix E). The purpose of this round was to rank order competencies (primary or secondary competencies) in order of importance. In addition, competencies which had not yet reached consensus in previous round were also included. A comparison was done to find out if competencies were ranked the same as when they were value rated by panelists in rounds one and two.

In round three, the frequency was used with the mean to rank order each competency cluster. Competencies in international agricultural development cluster one were ranked in this order: budget management was ranked number one, program design ranked two, contracting ranked three, grant writing ranked four, and monitoring and evaluation ranked five. In international agricultural development competency cluster two, consulting ranked number one, awareness of international agricultural development industry ranked two, technical expertise ranked three, business knowledge ranked four, and language fluency ranked least important with a five. In the language competency cluster French ranked number one, Spanish ranked two, Swahili ranked three, Arabic ranked four, and Portuguese ranked five.

Life experience cluster ranked internships with a development organization ranked number one, Peace Corps ranked two, long-term study abroad ranked three, volunteer programs abroad ranked four, short term study abroad ranked five, internships

on farms or ranches ranked six, and faculty-led study abroad ranked the lowest with a seven.

Panelists answered objective one, two and three by agreeing upon 29 competencies deemed necessary for international agricultural development graduates to gain employment, 16 critical competencies, and 13 secondary competencies were identified.

Six competencies that were deemed critical from the international agricultural development cluster were: project management, program design, communication, technical expertise, leadership, and decision making. Nine personal attribute competencies were judged critical: cultural sensitivity, knowledge and creativity, ethics and integrity, planning and organizing, resilience, team player, adaptability and flexibility, positive attitude, and interpersonal relationship building and collaboration. Only one competency from the life experience cluster competency was judged critical, internships with development organizations.

There were eight secondary competencies from the international agricultural development cluster: project/program monitoring and evaluation, contracting, business knowledge, awareness of international agricultural development industry, grant writing, budget management, consulting, and change management. French was the only competency from the language cluster that was found to be a secondary competency. Last, four competencies emerged from the life experience cluster: long-term study abroad, volunteer programs abroad, Peace Corps, internships on farms or ranches.

Recommendations for IAGD Graduate Programs

Competencies that had the highest level of congruency and criticality rating as indicated by the panelists were: communication (100%), resilience (100%), cultural sensitivity (95%), adaptability and flexibility (95%), ethics and integrity (91%), planning and organizing (90%), and team player (90%). Communication was the only competency that was did not fall within the personal attribute cluster. These competencies are often referred to as *soft skills* and can be what separates highly successful professionals from their colleagues (Brown, Harvey, & Stiles, 2011). One way to strengthen these competencies is to:

- offer courses that are designed for opportunities to work collaborative on class projects focusing on team/group work.

This allows students to learn to work with different types of people and forces them to communicate, plan, and organize. In addition, when working with a team one must learn to adapt and be flexible. In Chapter II, Review of the Literature programs at George Washington University and Bush School of Government at Texas A&M University's require students complete a capstone course where students work directly with a development agency or travel to a field site, and produce a substantive and professional product for a client.
It is my recommendation that:

- a capstone course be incorporated into master's-level international agricultural development curricula.

Other competencies that were rated critical were: knowledge and creativity (86%), interpersonal relationship building and collaboration (86%), positive attitude (81%), project management (81%), program design (81%), decision making (76%), technical expertise (67%), and leadership (72%).

One way to strengthen these competencies is to offer courses such as:

- project management

- program design, and

- courses that develop leadership skills both inside and outside the classroom through engagement with the community and experiential learning through consulting projects that also aims to build technical expertise.

Seventy-one percent of experts agreed that internships with development organizations are a critical life experience necessary for employment in international agricultural development.

Based on this finding, my recommendation is an internship experience be incorporated into IAGD graduate programs. Internships can benefit students in many ways including: practice in disciplinary skills, material for disciplinary reflection, academic credit, salaries, exposure to the habits of professional practice, increased self-awareness, expansion of social and professional networking and resume building (Westerberg & Wickersham, 2011).

Secondary life experiences valued by experts were: volunteer programs abroad (93%), Peace Corps (93%), long-term study abroad (86%), and internships on farms or ranches (79%).

Based on the study results, I recommend IAGD graduate programs create or facilitate summer volunteer programs students may take for course credit. Summer volunteer programs for international agricultural development students would provide much needed hands-on experience that potential employers look for in choosing candidates to interview.

Volunteer opportunities abroad can also build competencies such as: resilience, interpersonal relationship building and collaboration, cultural sensitivity, and knowledge and creativity (Cushner & Mahon, 2002).

Secondary competencies that had a high level of agreement in round two were: budget management (93%), project/program monitoring and evaluation (93%), grant writing (89%), and awareness of international agricultural development industry (84%). Courses recommended are:

- budget management

- project/program monitoring and evaluation,

- grant writing, and

- courses that focus on the international agricultural development industry past, present, and future trends and issues.

Literature has stated that being able to speak the native language is an important skill to have and has been noted to increase daily interactions, activities, and trusting partnerships (Hogan & Goodson, 1991; Bird & Dunbar, 1991; Logue, 2001). In this study, expert panelists did not reach agreement on language fluency being a critical

competency. French fluency was the only language that reached congruency as a secondary competency.

Based on this finding it is recommended that French be recommended in the curriculum as an elective.

No competency in isolation can adequately stand alone to ensure positive outcomes in projects or successful employees. It is the systematic blend of competencies, personal attributes, and life experience that subsequently make an employee successful. As mentioned before, there have been many competency-based studies on agriculture and international development individually, but there is a lack of focus specifically on international agricultural development. The paradox of specializing in one specific area, rather than becoming well-versed in many areas, has been debated by those who want a career in international development (Brinkman, Westendorp, Wals, & Mulder, 2007). Although there are some who believe graduates entering the international agricultural development field should have a broad competency base, many university programs prepare graduates to be experts in one area of study.

Recommendations for Future Research

The purpose of this research was to produce an inventory of competencies expected of master's-level graduates of international agricultural development programs based on the input of the international agricultural development community. This list of competencies will be shared with universities offering programs in international agricultural development so that curricula may be prepared accordingly to produce

career-ready graduates. The panel of experts representing the international agricultural community identified many competencies needed necessary to enter entry-level careers in international agricultural development. This research is the first step to answering many questions that remain unanswered, such as:

- How should master's-level international agricultural development graduate programs structure their courses to integrate the 16 critical competencies and 13 secondary competencies?

- What would the international agricultural development community recommend as the industry continues to grow and change?

- Can identifying major global trends impact academic emphasis areas for international agricultural development programs?

- How can public private partnerships better prepare students entering careers in international agricultural development?

These questions may be answered with additional research stemming from the initial findings of this study.

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APPENDIX A

From: Kollman, Jolene R.

To: [Potential Panelists]

Subject: Request for Participation: Master's-level International Agricultural Development Competency Survey

Date: 04/17/2015

Dear International Development Experts:

You have been identified as a potential participant for a Delphi research study intended to determine competencies needed to gain entry-level employment in international development for master's-level graduates in International Agricultural Development. You were selected to be a potential participant because of your specific knowledge and expertise on the topic that is being researched.

This study is being conducted in partial fulfillment of master's requirements in Agricultural Leadership, Education, and Communications and is sponsored by Texas A&M University. It is expected that the research will provide data describing the international development community's needs and expectations for entry-level employment and to assist faculty and administrators in developing improved graduate-level international agricultural development curricula. As a participant, you would receive a copy of the final research.

I would like to formally invite you to participate in this study, and ask you to recommend other potential experts by contacting me. My contact information is listed below for your convenience.

If you agree to participate in this study, it will take approximately two hours of your time, requiring completing a total of three surveys over a two-month period starting in 04/20/2015.

I will follow up with you in 3 days and will ask for your commitment at that time. Thanks in advance for your cooperation.

Sincerely,

Jolene R. Kollman, Hispanic Leaders in Agriculture and the Environment Fellow
Texas A&M University

Department of Agricultural Leadership, Education, and Communications
600 John Kimbrough Blvd. Room 251
College Station, TX 77845-2116
Tel: XXX-XXX-XXXX
E-mail: koll0866@tamu.edu

Project Title: Competencies expected of master's-level graduates of international agricultural development programs' as indicated by the international agricultural development community: A Delphi Study

You are invited to take part in a research study being conducted by Jolene Kollman, a researcher from Texas A&M University. The information in this form is provided to help you decide whether or not to take part. If you decide you do not want to participate, there will be no penalty to you, and you will not lose any benefits you normally would have.

Why Is This Study Being Done? The purpose of this study and research is to gain an inventory of competencies expected of master's-level graduates of international agricultural development programs, in order to propose recommendations for curriculum development.

Why Am I Being Asked To Be In This Study? You are being asked to be in this study because you have been identified as an expert in the field of International Agricultural Development. How Many People Will Be Asked To Be In This Study? Twenty people (participants) will be invited to participate in this study.

What Are the Alternatives to being in this study? The alternative to being in the study is not to participate.

What Will I Be Asked To Do In This Study? You will be asked to fill out an online questionnaire. The questionnaire will be sent to you three times over a two month period and should take two hours of your time.

Are There Any Risks To Me? The things that you will be doing are no more/greater than risks than you would come across in everyday life. If you participate in this study it will take two hours of your time unpaid. The researcher and PI will have access to your phone number and email address. Your personal information will be coded to protect your privacy.

Are There Any Benefits To Me? This research study is important to the international agricultural development community to assist academia in the selection of courses and curricula for graduate programs, and to help generate a better pool of qualified applicants for international agricultural development jobs.

Will There Be Any Costs To Me? Aside from your time, there are some/no costs for taking part in the study.

Will I Be Paid To Be In This Study? You will not be paid for being in this study.

Will Information From This Study Be Kept Private? The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only Jolene Kollman, and Manuel Pina will have access to the records. Information about you will be stored in locked file cabinet; computer files protected with a password.

Information about you will be kept confidential to the extent permitted or required by law. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly. Information about you and related to this study will be kept confidential to the extent permitted or required by law.

Who may I Contact for More Information? You may contact the Principal Investigator, Manuel Pina Ph.D., to tell him about a concern or complaint about this research at XXX-XXX-XXXX or XXXX@tamu.edu. You may also contact the Co-I, Jolene Kollman, at XXX-XXX-XXXX or XXXX@ag.tamu.edu.

For questions about your rights as a research participant; or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Subjects Protection Program office at (979) 458-4067 or irb@tamu.edu.

What if I Change My Mind About Participating? This research is voluntary and you have the choice whether or not to be in this research study. You may decide to not begin or to stop participating at any time. If you choose not to be in this study or stop being in the study, there will be no effect on your student status, medical care, employment, evaluation, relationship with Texas A&M University, etc. By completing the survey(s), you are giving permission for the investigator to use your information for research purposes.
Thank you.
Jolene Kollman
IRB NUMBER: IRB2015-0178D IRB APPROVAL DATE: 04/07/2015 IRB EXPIRATION DATE: 04/01/2016

Part I: International Agricultural Development Competencies

Below is a list of competencies. Please indicate the competencies you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank each of the 20 competencies by importance using the scale below.

Scale: 1=Not important
 2=Of little importance
 3=Moderately important
 4=Very important
 5=Extremely important

1. Program/Project monitoring & evaluation: Responsible for the design, quality, development and completion of all assessments, analytical reports and evaluations	1	2	3	4	5
2. Program/Project monitoring & evaluation: Responsible for the design, quality, development and completion of all assessments, analytical reports and evaluations	1	2	3	4	5
3. Contracting: Negotiating & preparing work agreements between organization and vendors, and consultants	1	2	3	4	5
4. Program design: Preparing needs assessment, community diagnosis, gathering data for baseline, recommending a solution with justification (goals & objectives), and activities and resources needed	1	2	3	4	5
5. Business knowledge: Demonstrating awareness of business functions and how business decisions affect financial and non-financial work results	1	2	3	4	5
6. Communication: Applying effective verbal, nonverbal, and written communication methods to achieve desired goals	1	2	3	4	5
8. Awareness of international agricultural development industry: Having a general understanding of political, cultural, and organizational factors, and trends	1	2	3	4	5
9. Grant writing: Preparing and completing a competitive application for funding provided by an institution such as a governmental department, corporation, foundation or trust	1	2	3	4	5

10. Technical expertise: Advanced knowledge in a specialized area of agriculture such as: crops, breeding, forestry, aquaculture, etc.…	1	2	3	4	5
11. Budget management: The analysis, organization and oversight of costs and expenditures for a specific program or project	1	2	3	4	5
12. Leadership: Leading, influencing, and coaching others to achieve positive outcomes	1	2	3	4	5
13. Decision making: Able to utilize their frame of reference & knowledge base to help digest information in a way that it can be formulated into a decision	1	2	3	4	5
14. Language fluency: The ability to read, write and speak more than one language	1	2	3	4	5
15. Spanish fluency	1	2	3	4	5
16. French fluency	1	2	3	4	5
17. Arabic fluency	1	2	3	4	5
18. Portuguese fluency	1	2	3	4	5
19. Swahili fluency	1	2	3	4	5
20. Change management: Helping people see the value and benefit of new technologies and helping them adapt to these changes	1	2	3	4	5

Part III: Personal Attributes

Below is a list of competencies. Please indicate the personal attributes you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank each of the 9 personal attributes by importance using the scale below.

Scale: 1=Not important
2=Of little importance
3=Moderately important
4=Very important
5=Extremely important

1. Cultural sensitivity: Knowing that cultural differences as well as similarities exist, without assigning values to those cultural differences.	1	2	3	4	5
2. Knowledge and creativity: Produces novel ideas and continues to increase their knowledge within their field	1	2	3	4	5
3. Ethics and integrity: Maintains high ethical standards, is trust worthy and demonstrates sincerity	1	2	3	4	5
4. Planning and Organizing: Sets realistic goals, organizes work and time effectively, meets deadlines, and makes plans and sticks to them	1	2	3	4	5
5. Resilience: Accepts feedback without getting defensive, works well under stress, can overcome challenges and setbacks,	1	2	3	4	5
6. Team player: Supports the efforts of others, behaves in a friendly manner, works well in a group setting, gives helpful feedback to others	1	2	3	4	5
7. Adaptability & flexibility: The ability to compromise and diplomatically adapt to challenging situations such as: poor living conditions, political & cultural differences	1	2	3	4	5
8. Positive Attitude: Positive thinking, the mental attitude or world view that looks on the more favorable side of events or conditions and expects the most favorable outcome	1	2	3	4	5
9. Interpersonal relationship building and collaboration: Interacting effectively with others in order to produce meaningful outcomes	1	2	3	4	5

Part III: Life Experiences

Below is a list of life experiences. Please indicate the life experiences you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank each of the 7 life experiences by importance using the scale below.

Scale: 1=Not important
       2=Of little importance
       3=Moderately important
       4=Very important
       5=Extremely important

1. Faculty-led study abroad: Typically a short term (1-10 week) structured program where students travel abroad with their class and a faculty representative and participate in structured activities with their group for course credit	1	2	3	4	5
2. Short term study abroad: A 4-10 week unsupervised trip abroad where a student lives and attends a university in another country for course credit	1	2	3	4	5
3. Long term study abroad: A 4-12 month unsupervised trip abroad where a student lives and attends a university in another country for course credit	1	2	3	4	5
4. Volunteer programs abroad: This includes volunteering with a development organization abroad, mission trips, nurses without borders, farmer-to-farmer. Volunteer programs vary significantly in the amount of time spent abroad therefore the timeline will not be specified	1	2	3	4	5
5. Peace Corps: Peace corps volunteers live in work in a foreign country in sectors such as: education, health, community and economic development, youth development, information technology, environment and agriculture for a period of 24 months	1	2	3	4	5
6. Internships with a development organization: A temporary position with development organization with an emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid	1	2	3	4	5
7. Internships on farms or ranches: A temporary position on a farm or ranch with the emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid	1	2	3	4	5

1. Please indicate the type of development organization you work for:

   o Governmental Agency

   o Private for-profit organizations

   o Private not-for-profit organizations

   o Philanthropic organizations

   o Bi-lateral organization

   o Multi-lateral organizations

2. Gender (Check one)

   o Male

   o Female

3. Please indicate your highest degree completed (Check one)

   o High School Diploma or GED

   o Associate degree

   o Bachelor's degree

   o Master's degree

   o Ph.D.

4. Please indicate the area of your degree

   o International Affairs

   o International Development

   o International Studies

   o International Agricultural Development

   o Business

   o Public Service and Administration

o   Other: Please specify below

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5. Please indicate your job title (check one)

   o   Development coordinator/Program coordinator

   o   Project manager

   o   Program specialist

   o   Program manger

   o   Program officer

   o   Monitoring and evaluation specialist

   o   Director

   o   Grants and compliance specialist

   o   Other: Please specify below

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6. Please indicate below the number of years you have been working in the field of

    international development.

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│              │
└──────────────┘
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From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round One
Date: 04/20/2015

Dear International Agricultural Development Experts:

Thank you for your willingness to be part of an expert panel. The attached survey is a survey that will serve as the foundation for future research, and curricula development —and it all starts with you and your fellow expert panelists!

The ultimate purpose of this study is to construct a reliable and statistically valid model for the most important competencies needed for careers in international agricultural development.

The competency statements were developed from an extensive review of the literature, related to International development and international agricultural development. Your assistance is vital to the completion of the first part of this three-part process.
By completing this process, you will be contributing your expertise to the international agricultural community and academia.

To begin, please click the survey link, which will open the first survey tool for your response.

Follow this link to the Survey:
Take the Survey
Or copy and paste the URL below into your internet browser:
http://tamuag.az1.qualtrics.com/WRQualtricsSurveyEngine?Q_SS=abHxdIZJf9RGD2t_25KQquTmcv39Cbb&Q_CHL=email
Follow the link to opt out of future emails:
Click here to unsubscribe

Thank you very much for your support,

Jolene R. Kollman, Hispanic Leaders in Agriculture and the Environment Fellow
Texas A&M University
Department of Agricultural Leadership, Education, and Communications
600 John Kimbrough Blvd. Room 251
College Station, TX 77845-2116
XXX-XXX-XXXX
E-mail: XXXX@tamu.edu

From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round One
Date: 04/20/2015

Dear International Agricultural Development Experts:

I recently sent you an individualized link for a competency survey on International Agricultural Development. The survey will should take about 10 minutes to complete. If you have filled out the survey, please reply to my email "yes".

If you have not had a chance to take the survey yet, please do so as soon as possible by using your individualized link.

To begin, please click the survey link, which will open the first survey tool for your response.

Follow this link to the Survey:
${l://SurveyLink?d=Take the Survey}

The closing date for the survey is Sunday May 3, 2015 at midnight. Central time.

Or copy and paste the URL below into your internet browser:
${l://SurveyURL}

Follow the link to opt out of future emails:
${l://OptOutLink?d=Click here to unsubscribe}

Thank you very much for your support,

Jolene R. Kollman, Hispanic Leaders in Agriculture and the Environment Fellow
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Department of Agricultural Leadership, Education, and Communications
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XXX-XXX-XXXX
E-mail: XXXX@tamu.edu

Part I: International Agricultural Development Competencies

Below is a list of competencies. Please indicate the competencies you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank each of the 20 competencies by importance using the scale below.

Scale: 1=Not important
      2=Of little importance
      3=Moderately important
      4=Very important
      5=Extremely important

1. Program/Project monitoring & evaluation: Responsible for the design, quality, development and completion of all assessments, analytical reports and evaluations	1	2	3	4	5
2. Contracting: Negotiating & preparing work agreements between organization and vendors, and consultants	1	2	3	4	5
3. Business knowledge: Demonstrating awareness of business functions and how business decisions affect financial and non-financial work results	1	2	3	4	5
4. Awareness of international agricultural development industry: Having a general understanding of political, cultural, and organizational factors, and trends	1	2	3	4	5
5. Grant writing: Preparing and completing a competitive application for funding provided by an institution such as a governmental department, corporation, foundation or trust	1	2	3	4	5
6. Budget management: The analysis, organization and oversight of costs and expenditures for a specific program or project	1	2	3	4	5
7. Consulting: Helping clients and stakeholders with questions and concerns, determine their needs, and plan implementation strategies for achieving their goals	1	2	3	4	5
8. Change management: Helping people see the value and benefit of new technologies and helping them adapt to these changes	1	2	3	4	5

Part II: Language Fluency

1. Language fluency: The ability to read, write and speak more than one language	1	2	3	4	5
2. Spanish fluency	1	2	3	4	5
3. French fluency	1	2	3	4	5
4. Arabic fluency	1	2	3	4	5
5. Portuguese fluency	1	2	3	4	5
6. Swahili fluency	1	2	3	4	5

Part III: Life Experiences

Below is a list of life experiences. Please indicate the life experiences you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank each of the 6 life experiences by importance using the scale below.

Scale: 1=Not important
2=Of little importance
3=Moderately important
4=Very important
5=extremely important

1. Faculty-led study abroad: Typically a short term (1-10 week) structured program where students travel abroad with their class and a faculty representative and participate in structured activities with their group for course credit	1	2	3	4	5
2. Short term study abroad: A 4-10 week unsupervised trip abroad where a student lives and attends a university in another country for course credit	1	2	3	4	5
3. Long term study abroad: A 4-12 month unsupervised trip abroad where a student lives and attends a university in another country for course credit	1	2	3	4	5
4. Volunteer programs abroad: This includes volunteering with a development organization abroad, mission trips, nurses without borders, farmer-to-farmer. Volunteer programs vary significantly in the amount of time spent abroad therefore the timeline will not be specified	1	2	3	4	5
5. Peace Corps: Peace corps volunteers live in work in a foreign country in sectors such as: education, health, community and economic development, youth development, information technology, environment and agriculture for a period of 24 months	1	2	3	4	5
6. Internships on farms or ranches: A temporary position on a farm or ranch with the emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid	1	2	3	4	5

From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round Two
Date: 05/11/2015

Dear International Agricultural Development Experts:

Thank you for your feedback in Round One of the study. Attached is a graphical summary of responses to each question; please click **Summary round 1** view responses and compare to your own judgments before starting Round Two survey questionnaire.

For this survey questions that have met a 70% consensus have been removed, while other questions/statements have been added and/or revised.

The objective of Round Two is to evaluate previous judgments and refine the competency model for final ranking of competencies in order of importance.

This survey will take approximately 10 minutes of your time. It would be great if we could have your response back by midnight Sunday May 24, 2015 to complete the survey.

Please click the link below to begin the survey.

Follow this link to the Survey:
Take the Survey
Or copy and paste the URL below into your internet browser:
http://tamuag.az1.qualtrics.com/SE?Q_DL=0AmYoHZYyVD1NMF_5iHDlVWa4whY KPj_MLRP_6f1kKpyapLIw9W5&Q_CHL=email
Follow the link to opt out of future emails:
Click here to unsubscribe

Best Regards,

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College Station, TX 77845-2116
Tel: XXX-XXX-XXXX
E-mail: koll0866@tamu.edu

From: Kollman, Jolene R.

To: [Panelist]

Subject: IAGD Round Two Reminder
Date: 05/20/2015

Dear International Agricultural Development Experts:

Thank you all again for sharing your time and knowledge. I recently sent you an individualized link for a competency survey on International Agricultural Development. The survey should take about 10 minutes to complete. For those of you who have already filled out the survey, thank you.

This survey will take approximately 10 minutes of your time. It would be great if I could have your response back by midnight Sunday, May 24, 2015.

Please click the link below to begin the survey.
Follow this link to the Survey:
Take the Survey
Or copy and paste the URL below into your internet browser:
http://tamuag.az1.qualtrics.com/WRQualtricsSurveyEngine?Q_DL=0AjFN23O5KNlTP T_2b1q5oZTCh1VbVP_MLRP_4U9bcgTWhsz3Qb3&Q_CHL=email
Follow the link to opt out of future emails:
Click here to unsubscribe

Best Regards,

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Part I: International Agricultural Development Competencies

Below is a list of competencies. Please indicate what you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank order each grouping (drag and drop), with **1 being the most important** and 5 being the least important.

Scale: 1= Critical
> **2= Extremely Important**
> **3= Moderately Important**
> **4= Of little importance**
> **5= Not important**

 Rank order these competencies by dragging and dropping them in order of importance with 1 being most important and 5 being least important.
1.

Program design: Preparing needs assessment, community diagnosis, gathering data for baseline, recommending a solution with justification (goals & objectives), and activities and resources needed	1
Contracting: Negotiating & preparing work agreements between organization and vendors, and consultants	2
Business knowledge: Demonstrating awareness of business functions and how business decisions affect financial and non-financial work results	3
Awareness of international agricultural development industry: Having a general understanding of political, cultural, and organizational factors, and trends	4
Technical expertise: Advanced knowledge in a specialized area of agriculture such as: crops, breeding, forestry, aquaculture, etc.…	5

2.

Language fluency: The ability to read, write and speak more than one language	1
Consulting: Helping clients and stakeholders with questions and concerns, determine their needs, and plan implementation strategies for achieving their goals	2
Business knowledge: Demonstrating awareness of business functions and how business decisions affect financial and non-financial work results	3
Grant writing: Preparing and completing a competitive application for funding provided by an institution such as a governmental department, corporation, foundation or trust	4
Monitoring & Evaluation	5

Part II: Language Fluency

Below is a list of Languages. Please indicate the language you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development.   Rank order each grouping (drag and drop), with **1 being the most important** and 5 being the least important.

Scale: 1= Critical
      2= Extremely Important
      3= Moderately Important
      4= Of little importance
      5= Not important

Rank order these competencies by dragging and dropping them in order of importance with 1 being most important and 5 being least important.

Spanish	1
French	2
Arabic	3
Swahili	4
Portuguese	5

Part III: Life Experiences

Below is a list of life experiences. Please indicate the life experiences you judge to be most important for beginning employees in organizations like yours who hold graduate degrees in international agricultural development. Rank order the grouping of life experiences by importance with **1 being the most important** and 7 being the least important.

Scale: 1= Critical
>   **2= Extremely Important**
>   **3= Very Important**
>   **4= Moderately Important**
>   **5= Somewhat Important**
>   **6= Of Little Importance**
>   **7= Not Important**

 Rank order these competencies by dragging and dropping them in order of importance with 1 being most important and 7 being least important.

Faculty- led study abroad: Typically a short term (1-10 week) structured program where students travel abroad with their class and a faculty representative and participate in structured activities with their group for course credit	1
Short term study abroad: A 4-10 week unsupervised trip abroad where a student lives and attends a university in another country for course credit	2
Long term study abroad: A 4-12 month unsupervised trip abroad where a student lives and attends a university in another country for course credit	3
Volunteer programs abroad: This includes volunteering with a development organization abroad, mission trips, nurses without borders, farmer- to- farmer. Volunteer programs vary significantly in the amount of time spent abroad therefore the timeline will not be specified	4
Peace Corps: Peace corps volunteers live in work in a foreign country in sectors such as: education, health, community and economic development, youth development, information technology, environment and agriculture for a period of 24 months	5
Internships with a development organization: A temporary position with development organization with an emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid	6
Internships on farms or ranches: A temporary position on a farm or ranch with the emphasis on on-the-job training rather than merely employment, and it can be paid or unpaid	7

Part IV

If you had access to the final competency model, what would you use it for? Rank in order with the most likely being 1 and least likely 5. Drag and Drop to rank

Benchmark my skills	1
Recommend it to Hiring Managers	2
Use it as a training tool	3
Pass it on to recruiting	4
I would do nothing	5

From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round Three
Date: 06/07/2015

First, I would like to apologies for this Round III coming to you late—I set it up in Qualtrics to send out Wednesday and for some reason it didn't get mailed out. I was checking today to look at responses and found it was not sent.

Thank you so very much for your feedback in Round Two of the study! We hope that the results of this study will be useful not only to academia, but to the international agricultural development community. We also hope that this experience will facilitate the interaction of experts and practitioners in an area of direct relevance to their common interest.

We just need a little bit more information. For this round we have eliminated all questions for which a 2/3% consensus was reached.

The objective of Round Three is to evaluate previous judgments and refine the competency model for final ranking of competencies in order of importance. For Round Three the competencies have been grouped and you will need to rank order each grouping.

Round Three will take approximately 10 minutes of your time. It would be great if we could have your response back by midnight Sunday June 21, 2015!

Follow this link to the Survey:
Take the Survey
Or copy and paste the URL below into your internet browser:
http://tamuag.az1.qualtrics.com/SE?Q_DL=0AmYoHZYyVD1NMF_5iHDlVWa4whY KPj_MLRP_6f1kKpyapLIw9W5&Q_CHL=email
Follow the link to opt out of future emails:
Click here to unsubscribe

Best Regards,

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From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round Three Reminder
Date: 06/16/2015

Dear International Development Experts:

Below is a link to Round III, it should take about 10 minutes to complete. It would be really great if we could get Round III back by Sunday, June 21. For those of you who have already completed Round III, thank you!

Follow this link to the Survey:
Take the Survey
Or copy and paste the URL below into your internet browser:
http://tamuag.az1.qualtrics.com/SE?Q_DL=0AmYoHZYyVD1NMF_5iHDlVWa4whYKPj_MLRP_6f1kKpyapLIw9W5&Q_CHL=email
Follow the link to opt out of future emails:
Click here to unsubscribe

Best Regards,

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From: Kollman, Jolene R.

To: [Panelists]

Subject: IAGD Round Three Reminder
Date: 07/03/2015

Dear International Agricultural Development Experts:

Thank you for your contribution to this modified Delphi study. Your combined input has provided valuable information that was needed to gain clarification on how academia can better prepare students seeking careers in international agricultural development. It is my hope that our efforts will ensure the success of future international agricultural development programs/projects by making sure future development workers are fully prepared for the demands of their careers.

Each of you will receive a copy of this research upon its completion.

Thank you very much for your support.

Kind and Best Regards,

Jolene R. Kollman, Hispanic Leaders in Agriculture and the Environment Fellow
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