Competencies of Entry-Level College Graduate Employees in Agribusiness*

by

Stephen E. Miller, Todd D. Davis, Wilder N. Ferreira,
Lawrence D. Fredendall, and Linda B. Nilson**

Abstract

Agribusinesses firms were surveyed to assess the competencies of their recent college-graduate employees according to whether the employees had agricultural or business degrees. Both graduate types received high average ratings for their computer skills and low average ratings for their knowledge of cultural and economic differences in international business.

Key Words: agribusiness, employees, competencies, skills, abilities, traits.

Selected Paper prepared for presentation at the
Southern Agricultural Economics Association Annual Meetings
Little Rock, Arkansas, February 5-9, 2005

**** The authors are Professor, Applied Economics and Statistics, Clemson University; Assistant Professor, Applied Economics and Statistics, Clemson University; Extension Associate, Applied Economics and Statistics, Clemson University; Associate Professor, Management, Clemson University; and Director, Office of Teaching Effectiveness and Innovation, Clemson University, respectively. Primary contact: Stephen E. Miller, Box 340313, Clemson, SC 29634-0313. E-mail: smllr@clemson.edu. Telephone: (864) 656 – 5786.**

Competencies of Entry-Level College Graduate Employees in Agribusiness

Goecker *et al.* estimated that approximately 40% of the potential job openings for U.S. food and agricultural sciences graduates during 2000-2005 would be for positions in management, finance, and marketing. Goecker *et al.* also indicated that the number of agricultural graduates qualified for these positions would be lower than the number of job openings, and that agribusiness firms would likely turn to graduates of allied fields, such as business curricula, to fill job openings.

There is no previous research to indicate whether agricultural graduates are at an advantage or disadvantage relative to business graduates in meeting the needs of agribusiness employers. However, such research is needed by educators in order to make informed decisions regarding curricula and course content that will improve the competitiveness of agricultural graduates as agribusiness employees. The objective of this research is to determine what weaknesses and strengths agribusiness managers observe in their recent college-graduate employees. That is, we seek to identify "gaps" between the knowledge, skill, ability, and trait areas (KSATs) of entry-level college graduate employees and the KSATs required for successful careers in agribusiness. We do so by conducting a nationwide survey of agribusiness firms. The paper proceeds as follows. First, we provide background information on previous studies that have investigated the KSATs that employers desire in their college graduate employees and/or employer perceptions of the strengths/weaknesses of their college graduate employees. Next, we discuss the materials and methods we used in our survey. We then present our survey results and discuss their implications.

Background

Broder and Houston surveyed agribusiness firms in 1984 in order to assess the needs and perceptions of firms that employ agricultural graduates. Their survey distinguished between graduates with degrees in agricultural economics/agribusiness, animal sciences, plant and soil sciences, agricultural engineering, agricultural social sciences, general agriculture, and non-agricultural fields. On average, the employers ranked communication skills as being the most important trait that they sought in graduates across all degree types, and ranked leadership ex-

perience as being the second most important trait for six of the seven degree types.[1] When the respondents were asked what skills/traits they found to be most lacking among their graduate hires, they most frequently cited communication skills across all degree types.[2] In discussing their findings, Broder and Houston (p. 21) say that colleges of agriculture "need to critically access [*sic*] the level of communication skills requirements …(and) provide greater opportunity for leadership and internship experience in their degree programs."

In a national survey of agribusiness firms, Litzenberg and Schneider asked the agribusiness managers to use a ten-point scale in ranking the relative importance of 74 KSATs that the managers sought in new employees. When classified into six major categories, the average ranking of the KSATs from most to least important were: interpersonal characteristics (e.g., work with others, self-motivation, leadership, etc.) – 8.66; communication skills (e.g., listening, writing, speaking, etc.) – 8.14; business and economics skills (e.g., finance, marketing, accounting, economics, etc.) – 6.47; technical skills (e.g., crop production, livestock production, biosciences, etc.) – 4.74; computer, quantitative, and management information (e.g., software, accounting systems, math, statistics, etc.) – 4.68; and previous work experience (e.g., work experience, extracurricular activities, internships, general education, etc.) – 4.58. Based on their survey results, Litzenberg and Schneider (p. 1032) concluded that "educators must address the development and improvement of … interpersonal and communication skills."

Klein surveyed agribusiness firms in Southern California in order to determine the firms' preferences regarding the educational background of entry-level college graduate hires. His survey instrument asked the respondents to use a four-point scale (1 = low importance,…, 4 = high importance) in ranking the importance of 40 KSATs. The five most important KSATs in terms of average rankings were: be a team player in problem solving situations – 3.29; express ideas clearly both verbally and in writing – 3.24; work without supervision – 3.24; maximize and coordinate the use of human and physical resources – 2.90; and use selling techniques – 2.88. Klein (p. 34) states "if these findings … are correct, they may raise questions about the appropriateness of our educational methods. If, for example, we stress the acquisition of knowledge at

---

[1] On average, respondents recruiting animal science graduates ranked work experience just ahead of leadership experience.

[2] The other skills/traits listed in the Broder and Houston survey instrument were business skills, computer skills, management skills, personality traits, rural background, and work experience.

the expense of teaching students how to think and react in a problem solving context, we may not be preparing students for successful employment in the contemporary business environment."

In a survey of employers of graduates of the College of Agricultural Sciences and Natural Resources (CASNR), University of Nebraska Lincoln, Andelt *et al.* asked the employers to evaluate the skill preparation of the graduates. The survey respondents used a five-point scale (1 = low or little, …, 5 = high or exceptional) in assessing the entry-level abilities of graduates and the importance of 51 KSATs in four major categories: communication; leadership; computer, quantitative, and management information (CQMI); and personal qualities. The respective average ratings of entry-level abilities and current importance were 3.29 and 3.89 for communication skills; 3.13 and 3.87 for leadership skills; 2.48 and 3.01 for CQMI skills; and 3.66 and 4.20 for personal qualities. Andelt *et al.* (p.48) concluded that "(t)ypically we faculty consider own subject matter domains to be the most important subject our students learn. What this study helps faculty understand is that employers do not discount the importance of technical subject matter, they do indicate that skills in communication, leadership, interpersonal competence, and computers are needed to survive in today's agribusiness environment."

As part of a survey of agribusiness employers in Oregon, Cole and Thompson asked the respondents how the College of Agricultural Sciences (CAS) at Oregon State University could improve its graduates for agribusiness positions. The three most common responses were: writing skills improvement, making sure that the graduates have practical (hands-on) experience, and requiring internships. The survey also asked the employers to assess the preparation of the CAS graduates and graduates of other institutions in 13 KSAT areas. On average, the CAS graduates were rated as being better prepared for all but one of the KSATs, writing skills.

Suvedi and Heyboer surveyed graduates of Michigan State University's College of Agriculture and Natural Resources (CANR) and their employers. The graduates and employers were asked to assess the preparation of the graduates in nine KSAT areas. On average, the employers rated the employees as being least prepared in terms of their computer, math, and writing skills.

The above studies focused on agribusiness firms and agricultural graduates. There is an extensive literature from business school disciplines dealing with the KSATs required by business school graduates if they are to have successful careers in general business. We summarize some of this literature in Table 1. In general, the results of surveys of general business employ-

ers agree with the results of surveys of agribusiness employers – communication and interpersonal skills are usually rated as being more important employee KSATs than are "subject matter" skills. Although these KSATs are rated as being among the most important KSATs, employers often indicate that graduates are weakest in these areas.

Data and Methods

Based on the previous studies discussed above, we identified 22 KSATs (leadership, public speaking, listening, relating to different kinds of people, basic business practice understanding, problem solving, decision-making, risk management, negotiation, computer technology, understanding of international cultures, business ethics, personal ethics, understanding of a market-based economy, globalization, interdependence of business functions, teamwork, conflict resolution, enthusiasm, self-confidence, initiative, and professionalism) that managers identified as being important for successful business careers. We designed a mail survey instrument that asked agribusiness managers to use a five-point scale (5 = very strong, …, 1 = very weak) in assessing the competencies of their recent college hires (i.e., employees hired out of college within the last five years) in these KSAT areas according to whether the hires had agricultural or business degrees. We pre-tested the instrument with six agribusiness managers, and revised the instrument in light of their comments.

Table 2 shows the industries that we classified as being in the agribusiness sector and their North American Industry Classification System (NAICS) codes. Based upon the *North American Industry Classification System: United States, 1997* (Executive Office of the President), these NAICS codes correspond to 97 four-digit Standard Industrial Classification (SIC) codes. We used the Gale Group's electronic database, *General Business File ASAP*, as a mailing address list frame in drawing our sample of firms operating in these 97 industries. This database contains sales, employment, and other data at the company level (i.e., company-level data are not available at the four-digit SIC level unless the company operates in only one four-digit SIC industry). Companies that operate in multiple SIC industries are listed under each SIC industry in which they operate.

We included in our sample the top ten firms in terms of sales in each of these 97 SIC codes. Leading companies that operate in multiple four-digit industries were assigned to an individual four-digit industry so that our sample included at least ten companies from each four-

digit industry.[3] We then drew a random sample of 2,030 of the remaining firms, for a total sample of 3,000 firms. The database includes domestic and international firms: the international firms were included in the sample if they have U.S. operations.

Our mailings were addressed to the individuals listed as the human resource executive (or similar) when provided. When the database did not provide the name of the human resource executive for a firm, our mailings were addressed to the individual listed as the president (or similar). We addressed the mailings to the "Human Resource Director" when the database did not provide the name of any company official for a firm. Our initial mailing consisted of a letter notifying the sample firms that they would be receiving a survey instrument within a few days. The second mailing consisted of a survey packet. The packet for the 970 "top ten" firms included a cover letter, four survey instruments, and four self-addressed stamped envelopes (SASEs). The cover letter asked the recipient to complete one of the questionnaires and to distribute the three remaining questionnaires to managers who supervised entry-level college graduate employees, preferably in finance, sales/marketing, and operations management. The packet for the remaining firms included a cover letter, a survey instrument, and a SASE. This cover letter asked the recipient or another manager who supervised entry-level college graduate employees to complete the questionnaire. A second survey packet was mailed to the firms that did not return their survey forms.[4] Because of the low response rate for the multiple questionnaires mailed to the 970 "top-ten" firms, the follow-up mailing to those firms included one survey instrument and one SASE.

Results and Discussion

Out of the 3,000 firms in the sample, 228 firms could not be contacted by mail. We received usable responses from 658 of the remaining firms for a response rate of 24%. Twelve of the firms that received four survey forms in their initial survey packets returned two or more completed survey forms, so the total number of usable responses was 682. The response rate to our survey is above the average response rate of 21% for business surveys (Dillman, p. 323) and the response rate for Broder and Houston's agribusiness survey (14%), but is below the response

---

[3] We would have preferred to have included the top ten firms in terms of employment, but employment data are not available for all of the firms in the database. However, sales and employment should be highly correlated within an industry.

[4] We tracked the survey responses by including an identification number on the labels of the return envelopes.

rates for Klein's (28%) and Cole and Thompson's (40%) agribusiness surveys. Litzenberg and Schneider do not provide an overall response rate for their agribusiness survey, but indicate the response rates ranged from 6% for food processing/distribution firms to 13% for grain-processing firms.

Among the respondents, 250 reported that they had supervised new college-graduate hires within the last five years, and the average number of supervised graduate hires was 9.88. Of these respondents, 21 had supervised agricultural graduates (average number supervised = 4.29), 164 had supervised business graduates (average number supervised = 6.30), 51 had supervised both agricultural and business graduates (average number supervised = 13.59), and 18 had supervised other types of graduates (average number supervised = 5.28).

Table 3 summarizes the assessments of respondents who had supervised both types of graduates. Paired t-values for tests of the null hypothesis that the mean assessments do not differ between business and agricultural graduates are significant at or below the 10% level for 11 of the 22 KSATs. Business graduates had higher mean assessments for seven of these 11 KSATs: speaking effectively to groups, understanding of basic business principles, using computer technology, knowledge of cultural/economic differences in international business, understanding of how the US economy works, understanding of the global nature of business, and understanding of the interdependence of business functions/departments. Agricultural graduates had higher mean assessments for only two of the 11 KSATs: ability to use good decision-making techniques in solving problems and ethical behavior on a personal level.

Table 4 summarizes the assessments of the respondents who had supervised business and/or agricultural graduates. The null hypothesis that the mean assessments of business and agricultural graduates are equal can be rejected at or below the 10% level for only four of the 22 KSATs. Business graduates had higher mean assessments for understanding of basic business principles, knowledge of cultural/economic differences in international business, and understanding of how the US economy works; and agricultural graduates had a higher mean assessment for ability to resolve conflicts with work team members.

We used a Least-Significant-Difference (LSD) criterion and a 5% significance level in testing for differences in mean assessments among KSATs for each graduate type. Tables 5 and 6 report the results for business and agricultural graduates, respectively. In general, agricultural

and business graduates are perceived to have common relative strengths and weaknesses.[5] For example, each of the five KSATs within the "top" three groups for business graduates also appear within the "top" three groups for agricultural graduates. Of the seven KSATs within the "bottom" three groups for business graduates, all but one (ability to resolve conflict with members of a work team) also appear within the "bottom" three groups for agricultural graduates.

Due to space limitations, we focus most of our discussion on the KSATs for which business and agricultural graduates are perceived to be relatively weak by their supervisors. The major accrediting body for business schools, the Association to Advance Collegiate Schools of Business International (AACSB) does not specify specific courses required for accreditation of undergraduate business programs. However, the AACSB (2005b, p.68) does require that accredited undergraduate business programs include "… learning experiences in such general knowledge and skill area as:

- Communication abilities.
- Ethical understanding and reasoning abilities.
- Analytic skills.
- Use of information technology.
- Multicultural and diversity understanding.
- Reflective thinking skills."

and "…learning experiences in such management-specific knowledge and skills areas as:

- Ethical and legal responsibilities in organizations and society.
- Financial theories, analysis, reporting, and markets.
- Creation of value through the integrated production and distribution of goods, services, and information.
- Group and individual dynamics in organizations.
- Statistical data analysis and management science as they support decision-making processes throughout an organization.
- Information technologies as they influence the structure and processes of organizations and economies, and as they influence the roles and techniques of management.

---

[5] The correlation between the means of the 22 KSAT assessments for business and agricultural graduates is 0.90.

- Domestic and global economic environments of organizations.
- Other management-specific knowledge and abilities as identifies by the school."

The second accrediting body for business schools is the Association of Collegiate Business Schools and Programs (ACBAP). The ACBAP (2005a, p. 36) says that "(i)n order to prepare business graduates for professional careers, the curriculum must encompass subjects dealing with the specifics of the global work place and the more general aspects of global society. Since business graduates must be equipped to interact with other members of society, adapt to societal changes, and serve as business advocates, students must be encouraged to study global topics that will prepare them for these challenges.." Accreditation by the ACBAP (2005a, p.37) requires curricula to have a "Common Professional Component" consisting of coursework in:

- functional areas (business finance, accounting, management)
- business environment (legal, economics, ethics, global dimensions)
- technical skills (information systems, quantitative techniques/statistics)
- integrative areas (business policies or comprehensive/integrating experience).

The low average ratings for "understanding of the global nature of business today" and "knowledge of the cultural and economic differences in international business" indicate that business programs have not succeeded in providing their graduates with either "multicultural and diversity understanding … (and) management-specific knowledge of domestic and global economic environments of organizations," or knowledge of "subjects dealing with the specifics of the global workplace and the more general aspects of global society."[6] Fugate and Jefferson indicate that the need to internationalize business curricula has been recognized since the 1960s. They state (p.2) that "(b)ecause business programs at colleges and universities traditionally have been viewed as training grounds for business America, such institutions have assumed and/or been assigned the task of preparing the task of preparing a corps of graduates who can manage on a global level. … However, the results have been less than spectacular, and there is apparent

---

[6] Our survey instrument did not ask the respondents to indicate whether their employees with business degrees were graduates of AACSB- or ACBSP-accredited programs. According to the United States Department of Education's Integrated Postsecondary Education Data System College Opportunities On-Line database, there are 1746 US institutions that offer undergraduate programs in "Business, Management, Marketing and Related Support Services." There are currently 439 institutions with AACSB-accredited baccalaureate business programs (AACSB, 2005a) and 152 institutions with ACBSP-accredited baccalaureate business programs (ACBSP, 2005b). Thus, the business-graduate employee assessments reported here may include assessments of graduates of non-accredited business programs.

widespread disenchantment with the educational community's ability to prepare the number and quality of graduates needed for jobs that span international borders." Our results for business graduates agree with their observation.

Agricultural graduates receive even lower mean assessments for their "understanding of the global nature of business today" and "knowledge of the cultural and economic differences in international business." Writing in 1987, Williams (pp. 51-52) said "(a) … characteristic affecting the potential marketability of agricultural economics graduates, emphasis on international education, appears to be generally negative. … Few departments, to my, knowledge, have a genuine commitment to international economic education. Commitment requires more that a course or two in foreign trade or participation of faculty in foreign economic development contracts. Students … need expanded learning experiences on economic, cultural, and institutional interdependencies in the world community." Apparently, the faculties responsible for undergraduate agribusiness and agricultural economics curricula have ignored his recommendation. Harris *et al.* compiled curriculum requirements for the 2001-2002 school year at112 U.S. institutions that offer undergraduate programs in agricultural economics and/or agribusiness. We summarize the portion of their results dealing with international trade, business, etc. in Table 7. On average, undergraduate agribusiness and agricultural economics programs require less than two hours of coursework that emphasizes international/global economic and business issues. Other undergraduate agricultural majors are likely to have even less exposure to these issues.

Fugate and Jefferson review proposals for improving students' international education. These proposals include: international travel study tours for students, student exchange programs, required coursework in international business, coverage of global issues in all business core courses, use of international students as a teaching resource, increasing corporate and government support for international education initiatives, and strengthening of AACSB- and ACBSP- accreditation requirements for international education. Williams (p. 52) says that the "Peace Corps, viewed as a two-year internship, may well be the best avenue for gaining international expertise."

Both business and agricultural graduates receive relatively low mean assessments for their "understanding of the interdependence of business functions/departments" and their "ability to make decisions in the face of incomplete information and risk." It is surprising that business

graduates do not clearly "outshine" agricultural graduates in the former KSAT. Per business program accreditation guidelines, business students should have knowledge of "integrated production of goods, services, and information" and/or have taken integrative coursework. Regarding the latter KSAT, perhaps both business and agricultural students would benefit if their instructors made more use of stochastic simulation as a pedagogical technique.

References

Andelt, L. L., L. A. Barrtee, and B. K. Bosshamer. "Employer Assessment of the Skill Preparation of Students from the College of Agricultural Sciences and Natural Resources, University of Nebraska Lincoln: Implications for Teaching and Curriculum." *NACTA Journal*, 41,4(1997): 47-53.

Association to Advance Collegiate Schools of Business International. "Accreditation." Online. Available at http:// www. aacsb.edu/accreditation/business/standards01-01-04.pdf. {Retrieved January 2005a].

Association to Advance Collegiate Schools of Business International. "Eligibility Procedures and Accreditation Standards for Business Accreditation." .Online. Available at http:// www. aacsb.edu/accreditation/business/standards01-01-04.pdf. {Retrieved January 2005b].

Association of Collegiate Business Schools and Programs. "ACBSP Standards and Criteria for Demonstrating in Baccalaureate/Graduate Degree Schools and Programs." Online. Available at http://www.acbsp.org/index.php?mo=st&op=ld&sid=s1_020acc&stpg=23. [Retrieved January 2005a]

Association of Collegiate Business Schools and Programs. "Current ACBSP Educational Institution Members." Online. Available at http://www.acbsp.org/index.php?mo=st &op=ld&sid=s1 _025 about&stpg=141. [Retrieved January 2005b]

Collier, B., and M. J. Wilson. "What Does a Graduate Need?: Evidence from the Careers and Opinions of CFOs." *Financial Practice & Education*, 4, Fall/Winter (1994): 59-65.

Broder, J. M. and J. E. Houston. "Employer Assessments of Graduates." *NACTA Journal*, 30,2(1986):18-22.

Cole, L., and G. Thompson. "Satisfaction of Agri-business Employers with College Graduates They Have Hired." *NACTA Journal*, 46,1(2002):18-22.

Dillman, D. A. *Mail and Internet Surveys: The Total Design Method (Second Edition)*. New York: John Wiley & Sons, 2000.

Executive Office of the President, Office of Management and Budget. *North American Industry Classification System: United States, 1997*. Lanham, MD: Bernam Press, 1998.

Fugate, D. L., and R. W. Jefferson. "Preparing for Globalization – Do We Need Structural Change for Our Academic Programs?" *Journal of Education for Business*, 76,3(2001). Online. Available at http://web4.infotrac.galegroup.com/itw/infomark/218/341/60343995w4/purl=rc2_ ITOF_1_fugate+Jefferson. [Retrieved January 2005].

Gaedeke, R. M., D. H. Tootelian, and B. F. Schaffer. "Employers Want Motivated Communicators for Entry-level Marketing Positions." *Marketing News,* 17, August 5 (1983): 1.

Goecker, A. D., J. Gilmore, and C. Whatley. Employment Opportunities for College Graduates in the Food and Agricultural Sciences Agriculture, Natural Resources, and Veterinary Sciences 2000-2005. Online. Available at http://faeis.tamu.edu/supplydemand/. [Retrieved December 2004].

Hafer, J. C., and C. C. Hoth. "Grooming Your Marketing Students to Match the Employer's Ideal Job Candidate." *Journal of Marketing Education*, 12, Spring (1981): 15-19.

Kimball, B. 'Practitioner Methodology for Entry-level Hiring Assessment: Issues for Academic Outcomes Assessment." *Journal of Education for Business*, 73,3(1998): 168-171.

Klein, M. L. "Southern California Food and Agricultural Firms." *NACTA Journal*, 34,2 (1990):30-34.

Lammers, M. L., J. C. Bennett, R. J. Olney and H. B. Lammers. "Perceptions of Interviewers' Evaluative Criteria for the Initial Job Interview: Implications for Our Marketing Students." *Journal of Marketing Education*, 15, Fall(1984): 57-61.

Litzenberg, K. K., and V. E. Schneider. "Competencies and Qualities of Agricultural Economics Graduates Sought by Agribusiness Employers." *American Journal of Agricultural Economics*, 69, December (1987): 1031-036.

McDaniel, S. W., and J. C. White. "The Quality of the Academic Preparation of Undergraduate Marketing Majors: An Assessment by Company Recruiters." *Marketing Education Review*, 3, Fall (1993): 9-16.

McWilliams, V. B., and C. C. Pantalone. "Structuring the Finance Curriculum: A Survey." *Financial Practice & Education*, 4,Spring/Summer (1994): 37-46.

Harris, H. M., Jr., S. E. Miller, and G. J. Wells. "Undergraduate Curricula in Agribusiness and Agricultural Economics: What's the Difference?**"** Selected paper, Southern Agricultural Economics Association Annual Meeting, Mobile, Alabama, 2003. Online. Available at http:// agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=6640&ftype=.pdf. [Retrieved January 2006].

Schmidt, S. "Marketing Alumni Perspectives on the Educational Challenges for the 1990s." *Marketing Education Review*, 1, Winter (1991): 24-33.

Survedi, M., and G. Heyboer. "Perceptions of Recent Graduates and Employers about Undergraduate Program in the College of Agriculture and Natural Resources at Michigan State University: A Follow-up Study." *NACTA Journal*, 48,1(2004):22-27.

Tomkovick, C., R. Erffmeyer, and G. Hietpes. "Evaluating Entry-level Sales Applicants: An Application of Policy Capturing by Collegiate Recruiters." *Marketing Education Review*, 6, Fall (1996): 29-40.

United States Census Bureau. *1997 Economic Census*. Available online at http://factfinder.census.gov/servlet/GQRTable?_ts=26149542530. Accessed December 11, 2001.

United States Department of Education, National Center for Educational Statistics. Integrated Postsecondary Education Data System College Opportunities On-Line database. Online. Available at: http://nces.ed.gov/ipeds/ cool/search.asp. [Retrieved January 2005].

Williams, F. W. "Agricultural Economics Undergraduate Curricula: Are We Competitive?" *Southern Journal of Agricultural Economics*, 19,1(1987):49-57.

Table 1. Knowledge, Skills, Abilities and Traits (KSATs) of College Graduates Required for Successful Business Careers – Summary of the Business Literature.

Author(s)	College Degree	Survey Respondents	Required KSATs
Collier & Wilson,	Business	Financial officers	Finance Accounting Ethics
Gaedeke *et al.*[a]	Marketing	Personnel managers	Communication Enthusiasm Self-confidence
Hafer and Hoth[a]	Marketing & Business	Employers & students	Motivation Initiative Interpersonal skills
Kimball	Business	Sales managers	Oral communication Intelligence Leadership
Lammers *et al.*[b]	Marketing	Recruiters	Social interaction Self confidence Professional poise
McDaniel and White	Marketing	Recruiters	Communication Work ethic Initiative
McWilliams and Pantalone	Finance	Financial officers	Financial Analysis Accounting Communication
Schmidt	Marketing	Employers	Realistic expectations Communication
Tamkovick *et al.*[a]	Marketing	Recruiters	Communication Enthusiasm Self-Confidence

[a] Examined success during job selection process.
[b] Examined success during job interview.

Table 2. Agribusiness Industries in the Survey

NAICS Code	Industry Description	Employment in 1997	Sales ($1000s) in 1997
	Manufacturing		
311	food	1,468,778	423,262,220
312	beverage & tobacco	176,119	96,932,891
3253	pesticide, fertilizer, other ag. chemicals	37,067	24,247,602
33311	agricultural, lawn & garden implements	94,847	23,363,932
333294	food product machinery	18,401	2,797,959
	Wholesale		
42182	farm & garden equipment	101,413	39,713,264
4224	grocery & related product	854,919	588,970,062
4225	farm product	97,521	166,786,245
4228	alcoholic beverage	151,677	69,703,203
42291	farm supply	74,508	53,634,309
42293	flower, nursery, & florists' supply	44,939	8,002,830
42294	tobacco & tobacco product	57,046	50,268,772
	Retail		
4442	lawn, garden equipment & supplies	165,616	31,677,905
445	food & beverage	2,893,074	401,764,499
	Service		
49313	farm product warehousing & storage	5,280	673,198
52313, 52314	commodity contract dealers & brokers	17,763	5,275,172
5416	consulting	511,252	63,428,740
56171	exterminating & pest control	81,214	4,910,668
722	food services & drinking places	7,754,567	251,941,763
	Totals	14,606,001	2,307,355,234

Source: U. S. Department of Commerce. *1997 Economic Census*.

Table 3. Summary of Assessments of Business and Agricultural Graduate Competencies by Supervisors of both Graduate Types[a]

Item	Knowledge, Skill, Ability, Trait (KSAT)	Business	Agriculture	n	MSL[b]
		mean	mean		
1	Ability to be a good leader	3.43	3.43	37	1.00
2	Ability to speak effectively to groups	3.55	3.33	36	0.06
3	Ability to listen well	3.36	3.46	39	0.25
4	Ability to relate well to many different kinds of people, including non-Americans	3.56	3.34	32	0.11
5	Understanding of basic business principles	3.43	2.98	40	<0.01
6	Ability to use the right tools in solving business and work problems	3.47	3.31	36	0.14
7	Ability to use good decision-making techniques in solving problems	3.45	3.63	38	0.07
8	Ability to make decisions in the face of incomplete information and risk	2.94	2.97	36	0.77
9	Ability to negotiate	3.09	3.06	34	0.79
10	Ability to use computer technology (e.g., spreadsheets, databases, multimedia)	4.28	4.03	40	0.02
11	Knowledge of the cultural and economic differences in international business	3.22	2.74	23	0.02
12	Knowledge of business ethics	3.36	3.31	39	0.57
13	Ethical behavior on a personal level (e.g., work ethic, fairness with others)	3.76	3.95	38	0.02
14	Understanding of how the U.S. economy works	3.36	2.88	33	<0.01
15	Understanding of the global nature of business today	3.03	2.68	31	<0.01
16	Understanding of the interdependence of business functions/departments	3.16	2.86	37	0.03
17	Ability to work effectively and efficiently on a work team	3.75	3.70	40	0.54
18	Ability to resolve conflict with members of a work team	3.36	3.42	36	0.57
19	Enthusiasm	3.82	3.90	39	0.32
20	Self-confidence	3.79	3.79	39	1.00
21	Initiative	3.46	3.62	39	0.23
22	Professionalism	3.74	3.72	39	0.79

a. The assessment scale is: 5 = very strong, 4 = somewhat strong, 3 = neither strong nor weak, 2 = somewhat weak, and 1 = very weak.

b. Marginal significance level (p-value) of the paired t-test of the null hypothesis that the KSAT mean assessment does not differ between business and agricultural graduates.

Table 4. Summary of Assessments of Business and Agricultural Graduate Competencies by all Supervisors[a]

Item	Knowledge, Skill, Ability, Trait (KSAT)	Business		Agriculture		MSL[b]
		mean	n	mean	n	
1	Ability to be a good leader	3.42	224	3.62	67	***0.20***
2	Ability to speak effectively to groups	3.40	218	3.48	66	0.54
3	Ability to listen well	3.65	227	3.59	70	0.65
4	Ability to relate well to many different kinds of people, including non-Americans	3.81	215	3.62	58	0.19
5	Understanding of basic business principles	3.53	229	3.09	68	<0.01
6	Ability to use the right tools in solving business and work problems	3.55	226	3.40	65	***0.27***
7	Ability to use good decision-making techniques in solving problems	3.56	227	3.62	66	0.62
8	Ability to make decisions in the face of incomplete information and risk	3.02	219	3.09	65	0.57
9	Ability to negotiate	2.97	216	3.13	61	0.26
10	Ability to use computer technology (e.g., spreadsheets, databases, multimedia)	4.33	228	4.13	69	***0.11***
11	Knowledge of the cultural and economic differences in international business	2.99	160	2.65	43	0.06
12	Knowledge of business ethics	3.47	224	3.36	69	0.41
13	Ethical behavior on a personal level (e.g., work ethic, fairness with others)	3.90	225	4.03	67	0.31
14	Understanding of how the U.S. economy works	3.29	207	3.08	60	0.10
15	Understanding of the global nature of business today	3.08	192	2.88	58	0.14
16	Understanding of the interdependence of business functions/departments	3.18	225	3.05	64	0.30
17	Ability to work effectively and efficiently on a work team	3.77	226	3.87	68	0.41
18	Ability to resolve conflict with members of a work team	3.28	218	3.50	64	0.10
19	Enthusiasm	4.10	226	3.96	68	***0.26***
20	Self-confidence	3.96	225	3.91	68	0.65
21	Initiative	3.77	225	3.72	69	0.74
22	Professionalism	3.77	226	3.79	67	0.84

a. The assessment scale is: 5 = very strong, 4 = somewhat strong, 3 = neither strong nor weak, 2 = somewhat weak, and 1 = very weak.

b. Marginal significance level (p-value) of the t-test that the KSAT mean assessment does not differ between business and agricultural graduates. Values in ***bold italic*** (regular) font are based on the assumption of unequal (equal) variances, pre-tested at the 20% level.

Table 5. Comparisons of Mean Assessments of Business Graduate Competencies by all Supervisors[a]

Item	Knowledge, Skill, Ability, Trait (KSAT)	Mean	Group[b]										
			A	B	C	D	E	F	G	H	I	J	K
10	Ability to use computer technology	4.33	X										
19	Enthusiasm	4.10		X									
20	Self-confidence	3.96		X	X								
13	Ethical behavior on a personal level	3.90			X	X							
4	Ability to relate well to many different kinds of people	3.81			X	X	X						
17	Ability to work effectively and efficiently on a work team	3.77				X	X						
21	Initiative	3.77				X	X						
22	Professionalism	3.77				X	X						
3	Ability to listen well	3.65					X	X					
7	Ability to use good decision-making techniques in solving problems	3.56						X	X				
6	Ability to use the right tools in solving business and work problems	3.55						X	X				
5	Understanding of basic business principles	3.53						X	X				
12	Knowledge of business ethics	3.47							X				
1	Ability to be a good leader	3.42							X	X			
2	Ability to speak effectively to groups	3.40							X	X			
14	Understanding of how the U.S. economy works	3.29								X	X		
18	Ability to resolve conflict with members of a work team	3.28								X	X		
16	Understanding of the interdependence of business functions/departments	3.18									X	X	
15	Understanding of the global nature of business today	3.08										X	X
8	Ability to make decisions in the face of incomplete information & risk	3.02										X	X
11	Knowledge of cultural & economic differences in international business	2.99											X
9	Ability to negotiate	2.97											X

a. The assessment scale is: 5 = very strong, 4 = somewhat strong, 3 = neither strong nor weak, 2 = somewhat weak, and 1 = very weak.

b. Xs within a Group column indicate that the corresponding KSAT means do not differ at the 5% level based on the Least Significant Difference (LSD) criterion. Here, the LSD is 0.1697.

Table 6. Comparisons of Mean Assessments of Agricultural Graduate Competencies by all Supervisors[a]

Item	Knowledge, Skill, Ability, Trait (KSAT)	Mean	Group									
			A	B	C	D	E	F	G	H	I	J
10	Ability to use computer technology	4.13	X									
13	Ethical behavior on a personal level	4.03	X	X								
19	Enthusiasm	3.96	X	X								
20	Self-confidence	3.91	X	X	X							
17	Ability to work effectively and efficiently on a work team	3.87	X	X	X	X						
22	Professionalism	3.79		X	X	X						
21	Initiative	3.72		X	X	X	X					
1	Ability to be a good leader	3.62			X	X	X	X				
4	Ability to relate well to many different kinds of people	3.62			X	X	X	X				
7	Ability to use good decision-making techniques in solving problems	3.62			X	X	X	X				
3	Ability to listen well	3.59			X	X	X	X				
18	Ability to resolve conflict with members of a work team	3.50				X	X	X				
2	Ability to speak effectively to groups	3.48				X	X	X				
6	Ability to use the right tools in solving business and work problems	3.40					X	X	X			
12	Knowledge of business ethics	3.36						X	X	X		
9	Ability to negotiate	3.13							X	X	X	
5	Understanding of basic business principles	3.09							X	X	X	
8	Ability to make decisions in the face of incomplete information & risk	3.09							X	X	X	
14	Understanding of how the U.S. economy works	3.08							X	X	X	
16	Understanding the interdependence of business functions/departments	3.05								X	X	
15	Understanding of the global nature of business today	2.88									X	X
11	Knowledge of cultural & economic differences in international business	2.65										X

a. The assessment scale is: 5 = very strong, 4 = somewhat strong, 3 = neither strong nor weak, 2 = somewhat weak, and 1 = very weak.

b. Xs within a Group column indicate that the corresponding KSAT means do not differ at the 5% level based on the Least Significant Difference (LSD) criterion. Here, the LSD is 0.3283.

Table 7. Summary of "International" Course Requirements for Agribusiness (AB), Agricultural Economics (AE), and Agribusiness/Agricultural Economics (ABAE) Baccalaureate Programs.

Course	AB	AE	ABAE
	---- mean semester credit hours -----		
International trade/economics {AE, E} [a]	0.58	0.84	0.93
International economic development {AE, E}	0.09	0.12	0.00
International business {AE}	0.20	0.14	0.19
International business {B}	0.25	0.00	0.75
World food/international agriculture {A, AE}	0.41	0.47	0.00
Course total	1.53	1.57	1.87
Program total	125.62	125.44	127.89

Source: Harris *et al.* (pp.12 -13)

a. Letters in braces {} denote the department(s) typically offering the course(s): A = agricultural departments (e.g., animal science, agronomy, general agriculture), AE = agricultural economics/agribusiness (or similar), B = business school departments (e.g., accounting, finance, management, marketing), and E = economics.