

How Do Employers Assess Job Candidate Attributes?



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Abstract

It is widely known that Employers seek college graduates with problem solving skills, character, ability to communicate, and social skills. How employers determine a candidate's possession of these attributes, however, is less evident. A survey of 72 agricultural employers was utilized to address this question. Employers were asked to indicate the usefulness of certain methods in assessing job candidates' possession of these attributes. Regardless of the attribute being considered, employers state the most useful measure of whether the candidate possesses the attribute is the personal interview.

Introduction

The importance of academic achievement and personal characteristics of college graduates has been the focal point of research among education and labor economists. Placement of graduates is considered to be a measure of success of educational programs, including those in the agricultural sciences. Most of the employment opportunities available to students in the agricultural and natural resources field not only require technical skills, but also a broad range of non-technical skills for success in the workplace. Employers want agribusiness majors to understand accounting, and agronomy majors to understand biology, but seek good communication skills and an ability to work well with others regardless of the major.

Not having gained the skills and knowledge demanded by employers while in college, or even prior to entering college, has been cited as one of the reasons students' struggle to find employment (Andelt et al., 1997). Successful employees are expected to encounter and solve problems. Animal science students are hired to tackle animal production problems, and agribusiness students to rectify business problems, but general problem solving abilities are expected of all. Other intangible attributes such as character and communication skills are also desired of graduates regardless of their major. In this study, intangible attributes refer to qualifications not easily measured but expected of all college graduates. Several published studies have noted that employers find these intangible attributes as being crucial for acquiring and succeeding in one's job

(Broder and Deprey, 1985; Barkley, 1992; Barkley et al., 1999; Boland and Akridge, 2004; Norwood and Henneberry, 2006). These studies have focused on the importance of the aforementioned intangible attributes, but no study has documented how employers assess a job candidate's possession of these attributes.

The objective of this study is to quantify the usefulness of different measures employers have at their disposal when assessing a job candidate's possession of intangible attributes. Some of the measures that employers use to assess a job candidate's intangible attributes are themselves tangible; such as grade point average (GPA), major, job or internship experiences, classes taken, etc. For example, employers may associate a high GPA with problem solving ability, participation in community service organizations may signal a high character, and leadership participation in university organizations may indicate an ability to work well with others. A more subjective signal is the interview. Virtually all college graduates participate in personal interviews before receiving a job offer. These interviews often require the candidate to travel large distances, costing thousands of dollars. An employer's willingness to pay this cost for a personal interview is indicative of its importance.

This study focuses on five college graduate attributes: number crunching ability, character, communication skills, problem solving skills, and ability to work well with others. Internet surveys were administered to a diverse set of agribusinesses, targeting managers with influence over hiring decisions, yielding 72 useful responses. For each attribute, respondents were given a list of measures, and were asked to rate each measure as not useful, somewhat useful, useful, or very useful in assessing a candidate's possession of a particular attribute. For example, when assessing a candidate's character, respondents rated the usefulness of the personal interview, awards and honors, affiliation with a religious organization, grade point average, participation in community service activities, and personal references. The main finding is that the personal interview is the most useful measure. It is also interesting to note that no employer found the interview as being 'not useful' when assessing these five attributes. This result stresses the importance

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for students to practice their interviewing skills through mock interviews or other resources that show the 'do's and don'ts' of a personal interview.

The remainder of this paper is organized as follows. The next section contains a literature review of the past studies on the important impact of college graduate attributes on starting salaries, followed by a description of the survey instrument and respondent characteristics. Results are presented in the subsequent section and finally, the implications of these results for teachers and advisors are discussed.

Previous Studies of Job Candidate Attributes

Many of the labor economics studies have utilized human capital theory to explain the relationship between educational inputs and occupational success. According to theory, the cognitive skills formed in college are the same skills that enable the individual to do well in the workplace because they are more productive. Their productivity is therefore rewarded through higher pay (Donhardt, 2004). Basic academic and technical skills are essential as they determine the ability to learn new information. This is important because technology is continuously changing. Non-technical skills or intangible attributes; such as verbal communication skills, ability to work well with others, initiative, flexibility, and ability to learn new tasks, have also been cited as important determinants of employability and earnings (Wentling, 1987).

Previous studies have sought to link student actions to future earnings. Those actions considered by researchers as having impacted current earnings are categorized into college (or pre-college) learnt skills, interpersonal aptitudes, demographic attributes, and career choice variables. Academic skills have been represented by major, GPA, type and level of degree, writing skills, job experience, leadership positions and extracurricular activities. Interpersonal aptitudes are communication skills and the level of motivation of the job candidate.

Most studies use regression analysis to estimate the impact of the selected attributes on starting salaries. Some studies have investigated the effects further and have measured the relative premia attached to selected tangible and intangible attributes (Broder and Deprey, 1985; Barkley, 1992; Barkley et al., 1999; Norwood and Henneberry, 2006). Although the importance of each of these factors on earnings varies somewhat across studies, most have shown the significance of interpersonal skills. Based on a survey

of agribusiness leaders across the industry, Boland and Akridge (2004) found that communication and interpersonal skills have more value than industry-specific knowledge.

Litzenberg and Schneider's (1987) Agribusiness and Management Aptitude and Skill Survey (AGRIMASS) identifies the board-room-type skills and more specifically, the interpersonal characteristics, as having the highest rank among the skills that are required from agricultural economics/agribusiness graduates. Interestingly, international skills ranked low, while technical skills showed a substantial amount of variation among the specific categories. Norwood and Henneberry (2006), through choice experiments administered to employers of agricultural college graduates, found that character, followed by passion and dedication, and communication skills have the highest relative value to employers. Other attributes listed in their survey included: major, awards, leadership positions, internship experience, and multiple language skills.

Another common educational factor used to reflect academic achievement is GPA. However, past studies do not point to a clear direction on the impact of this tangible attribute on starting salaries nor on salary growth. A study of the graduates of a state-supported Carnegie Doctorate/Research Extensive institution did not show any significant impact of GPA on salaries or salary growth (Donhardt, 2004). Broder and Deprey (1985) surveyed University of Georgia agricultural economics alumni to measure the impact of innate aptitudes and skills as well as

Table 1. Summary Statistics of Survey Respondents

<i>Which category best describes your organization?</i>		<i>How many employees does your organization maintain?</i>	
<i>Percent of Respondents</i>		<i>Percent of Respondents</i>	
Government Organization	8.33%	Less than 10	10%
Manufacturer	37.50%	10-49	15%
Financial Services	6.94%	50-99	7%
Consultant	2.78%	100-500	18%
Food Processor	4.17%	Greater than 500	50%
Retailer	2.78%		
Wholesaler	8.33%		
Farm	1.39%		
Farm Input Supplier	16.67%		
Other	11.11%		
<i>Which one degree do you most prefer to hire?</i>		<i>What percent of your employees have college degrees?</i>	
<i>Percent of Respondents</i>		<i>Percent of Respondents</i>	
Ag Economics or Agribusiness	40%	None	0%
Agronomy or Related	10%	1-24%	15%
Animal Science	14%	25-49%	15%
Agricultural Communications	1%	50-74%	35%
Agricultural Engineering	8%	75-99%	29%
Food Science	1%	100%	6%
Horticulture	4%		
Other	22%		

Note: The sample size was 72.

investments in human capital on earnings. Although their results showed a positive relationship between GPA and salary, the impact was not statistically significant. On the other hand, Barkley (1992) concluded that grades had a significant impact on current salaries of Kansas State University agricultural graduates.

The above literature shows the importance of a potential job candidate developing certain technical skills as well as intangible attributes. These skills and attributes make the candidate appealing and is a good indication that the candidate will be successful in his/her job. Studies documenting the importance of intangible attributes are only useful if we can communicate to students how to signal these attributes in the job search. Thus, the survey instrument used in this study asks employers about the usefulness of different methods in assessing a job candidate's intangible attributes: number crunching ability, character, communication skills, problem solving skills, and ability to work well with others.

The Survey Instrument and Respondent Characteristics

Internet surveys were sent to 205 agribusinesses contained in the annual agribusiness directory published by AgriMarketing. Of the internet survey invitations, 14 were returned as undeliverable, 114 did not take the survey, and five respondents indicated they had no influence over hiring decisions, leaving 72 usable responses. The employers in the sample represented a broad range of organizations, most being manufacturers or farm input suppliers. While agricultural economics / agribusiness was the most preferred degree within the sample, all the agricultural degrees shown in Table 1 were preferred by at least one employer. Finally, most of the employers were large, employing more than 500 people, and most have a workforce of at least 25% college graduates.

The survey questions are shown in Tables 2-6. Respondents were presented with a particular attribute (e.g. communication skills) and asked to indicate whether a particular measure is not useful, somewhat useful, useful, or very useful when determining whether the candidate possesses that attribute. Some of these measures were present on multiple attributes.

Results and Discussion

The survey results are presented in Tables 2-6. Each table refers to a particular attribute. For example, see Table 2, referring to "number crunching skills." Respondents were queried on the usefulness of the personal interview, courses listed on transcripts, the candidate's major, knowledge of software, grade point average, and personal references in judging number crunching skills. In the table, the percent of respondents that ranked each measure as not useful, somewhat useful, useful, or very useful is

listed. For instance, 53% found personal interviews very useful, but only 10% found personal references very useful when assessing a candidate's "number crunching skills."

Raw percentage point differences are useful but do not necessarily indicate a statistical difference, so a corrected Wilcoxon signed rank test is employed to determine whether one measure is statistically more or less useful than another. The corrected Wilcoxon signed rank test (WSRT) is a nonparametric test that compares two related samples containing discrete data (Conover and Iman, 1981). The last two columns of Tables 2-6 contain the WSRT results. For example, in Table 2 concerning number crunching skills, measure 1 (the personal interview) is ranked statistically higher than all the other measures. Measure 2 (courses listed on transcript) is ranked statistically lower (meaning less useful) than measures 1 and 4 (the personal interview and knowledge of software). This implies that the usefulness of measure 2 (courses listed on transcript) is not statistically different from measures 3, 5, and 6 (major, grades, and letters of recommendation, respectively).

Number Crunching Ability

More than 90% of employers stated that their general perception of the candidate as achieved through personal interviews was very useful (53%) or useful (39%) in determining the candidates' "number crunching skills." Also, no employers stated that their perception through interviews was not useful. As the WRST indicates, the higher usefulness ranking given to personal interviews is statistically greater than all competing measures.

A candidate's knowledge of software (such as Microsoft Access, Excel, or statistical programs) was very useful and useful for 25% and 51% of employers, respectively. In addition, a candidate's major was more useful in assessing number crunching skills than letters of recommendation. Overall, letters of recommendation were the least useful measure for employers when determining a job candidate's number crunching ability.

Character

Character has been identified as one of the most important attributes of a job candidate in determining their employability and future success (Litzenberg and Schneider, 1987; Boland and Akridge, 2004; Norwood and Henneberry, 2006). Character is a vast definition that encompasses many attributes; including interpersonal skills, honesty, passion, and dedication. Since character incorporates many attributes, it would be beneficial for university career advisors to understand how employers identify high-character individuals. Based on the results in Table 3, all respondents stated that their general perception of the candidate as achieved through personal interviews was useful. 64% stated that it was very useful, followed by 29% found it

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Table 2. Employers' Response to How Useful Each Method is in Determining a Job Candidate's "Number Crunching Ability"

Measure Number	When determining a job candidate's ability to "crunch numbers", how useful do you find...	Not Useful	Somewhat Useful	Useful	Very Useful	Employers Found this Measure to Be... ^a	
						Less Useful Relative to Measure:	More Useful Relative to Measure:
1	your general perception of the candidate as achieved through personal interviews <input type="checkbox"/>	0%	8%	39%	53%	-----	2, 3, 4, 5, 6
2	courses listed on candidate's transcript like finance, math, economics, and accounting courses <input type="checkbox"/>	6%	31%	51%	13%	1, 4	-----
3	the candidate's major <input type="checkbox"/>	3%	29%	50%	18%	1	6
4	knowledge of software as reported on candidate's resume like Microsoft Access, Excel, or statistical programs <input type="checkbox"/>	6%	18%	51%	25%	1	2, 5, 6
5	the candidate's grade point average <input type="checkbox"/>	4%	36%	47%	13%	1, 4	-----
6	letters of recommendation and other personal references <input type="checkbox"/>	13%	39%	39%	10%	1, 3, 4	-----

^a These statements are based on the corrected Wilcoxon Signed Rank Test. Each pairwise comparison is at least statistically different at the 5% level. P-values were calculated via 10,000 Monte Carlo simulations.

Table 3. Employers' Response to How Useful Each Method is in Determining a Job Candidate's Character

Measure Number	When determining a job candidate's character, how useful do you find...	Not Useful	Somewhat Useful	Useful	Very Useful	Employers Found this Measure to Be... ^a	
						Less Useful Relative to Measure:	More Useful Relative to Measure:
1	your general perception of the candidate as achieved through personal interviews <input type="checkbox"/>	0%	7%	29%	64%	-----	2, 3, 4, 5, 6
2	awards and honors listed on resume <input type="checkbox"/>	8%	42%	42%	8%	1, 5	3
3	affiliation with a religious organization <input type="checkbox"/>	47%	28%	22%	3%	1, 2, 4, 5, 6	-----
4	the candidate's grade point average <input type="checkbox"/>	8%	47%	32%	13%	1, 5	3
5	participation in community service activities <input type="checkbox"/>	6%	28%	57%	10%	1	2, 3, 4
6	letters of recommendation and other personal references <input type="checkbox"/>	11%	29%	40%	19%	1	3

^a These statements are based on the corrected Wilcoxon Signed Rank Test. Each pairwise comparison is at least statistically different at the 5% level. P-values were calculated via 10,000 Monte Carlo simulations.

Table 4. Employers' Response to How Useful Each Method is in Determining a Job Candidate's Communication Skills

Measure Number	When determining a job candidate's communication skills, how useful do you find...	Not Useful	Somewhat Useful	Useful	Very Useful	Employers Found this Measure to Be... ^a	
						Less Useful Relative to Measure:	More Useful Relative to Measure:
1	your general perception of the candidate as achieved through personal interviews <input type="checkbox"/>	0%	3%	33%	64%	-----	2, 3, 4, 5, 6
2	courses listed on candidate's transcript like English, technical writing, business communications, speech, etc <input type="checkbox"/>	10%	35%	44%	11%	1, 4	-----
3	knowledge of software as reported on candidate's resume like Microsoft Access, Excel, or statistical programs <input type="checkbox"/>	13%	28%	43%	17%	1	5
4	leadership positions held in university, community, or industry organizations <input type="checkbox"/>	6%	26%	42%	26%	1	2, 5, 6
5	the candidate's grade point average <input type="checkbox"/>	10%	48%	38%	4%	1, 3, 4	-----
6	letters of recommendation and other personal references <input type="checkbox"/>	11%	37%	41%	11%	1, 4	-----

^a These statements are based on the corrected Wilcoxon Signed Rank Test. Each pairwise comparison is at least statistically different at the 5% level. P-values were calculated via 10,000 Monte Carlo simulations.

Table 5. Employers' Response to How Useful Each Method is in Determining a Job Candidate's Problem Solving Skills

Measure Number	When determining a job candidate's problem solving skills, how useful do you find...	Not Useful	Somewhat Useful	Useful	Very Useful	Employers Found this Measure to Be... ^a	
						Less Useful Relative to Measure:	More Useful Relative to Measure:
1	your general perception of the candidate as achieved through personal interviews□	0%	4%	46%	50%	-----	2, 3, 4, 5, 6
2	courses listed on candidate's transcript□	14%	39%	42%	4%	1, 5	-----
3	the candidate's major□	10%	34%	51%	6%	1	-----
4	knowledge of software as reported on candidate's resume like Microsoft Access, Excel, or statistical programs□	8%	45%	32%	14%	1	-----
5	the candidate's grade point average□	3%	41%	48%	8%	1	2
6	letters of recommendation and other personal references□	13%	39%	37%	11%	1	-----

^a These statements are based on the corrected Wilcoxon Signed Rank Test. Each pairwise comparison is at least statistically different at the 5% level. P-values were calculated via 10,000 Monte Carlo simulations.

Table 6. Employers' Response to How Useful Each Method is in Determining a Job Candidate's Ability to Work Well with Others

Measure Number	When determining a job candidate's ability to work well with others, how useful do you find....	Not Useful	Somewhat Useful	Useful	Very Useful	Employers Found this Measure to Be... ^a	
						Less Useful Relative to Measure:	More Useful Relative to Measure:
1	your general perception of the candidate as achieved through personal interviews□	0%	3%	45%	52%	-----	2, 3, 5, 6
2	membership in organizations such as university clubs and fraternities and societies□	7%	43%	42%	8%	1, 3, 4	-----
3	leadership positions held in academic organizations such as university clubs□	4%	24%	46%	26%	1, 4	2, 5, 6
4	prior work or internship experience□	1%	8%	47%	43%	-----	2, 3, 5, 6
5	extracurricular activities such as intramural sports□	19%	35%	43%	3%	1, 3, 4	-----
6	letters of recommendation and other personal references□	10%	35%	41%	14%	1, 3, 4	-----

^a These statements are based on the corrected Wilcoxon Signed Rank Test. Each pairwise comparison is at least statistically different at the 5% level. P-values were calculated via 10,000 Monte Carlo simulations.

useful and 7 % stated it was somewhat useful. In addition, the employers found that the interview was more useful relative to the other measures considered.

Participation in community services, letters of recommendation, and awards and honors were ranked next; with 67%, 59%, and 50% of the employer respondents ranking them as being either very useful or useful, respectively. Interestingly, almost half of the respondents (47%) reported that affiliation with religious organizations was not useful in their assessment of a candidate's character and only 3% said that it was very useful. The difference in the usefulness of the personal interview to competing measures is stark. There is little doubt that the best way to signal one's character is to excel in the personal interview.

Communication Skills

There is no doubt that written and verbal communication skills are important in an individual's success in college and after graduation. Table 4 shows the employers' responses to how useful each measure is in assessing a job candidate's communication skills. Since the interview is often the first opportunity an employer has to meet the candidate, it is not surprising that the interview is the most useful method to assess a candidate's communication skills. Almost all of the employer respondents (97%) reported that their perception of the candidate as achieved through interviews as very useful (64%) or useful (33%) in determining a job candidate's communication skills. Leadership positions held, knowledge of software, communication related courses listed on the candidate's transcript, and letters of recommendation were ranked as very useful or useful by 68%, 60%,

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55%, and another 55% of the employer respondents, respectively.

Problem Solving Skills

A skill that is very useful in the business world is the ability of a job candidate to effectively and efficiently solve problems. Survey results for this skill are shown in Table 5. Similar to other characteristics mentioned above, the employer's perception of the candidate achieved through the interview was ranked by almost all (96%) as being very useful (50%) or useful (46%) and is the most important method in determining the candidate's problem solving skills. Also, no employer reported that it was not useful.

Most of the respondents ranked the other attributes only as somewhat useful or useful in their determination of a candidate's problem solving skills. The candidate's GPA, major, and courses on the transcript was ranked as somewhat useful or useful by 89%, 85%, and 81% of the respondents, respectively. Overall, there was little statistical difference between the usefulness of courses listed on transcript, major, knowledge of software, grades, and personal references. The only clear distinction that can be made is that the personal interview is the most useful measure, and grade point average is more useful than courses listed on a transcript.

Ability to Work Well with Others

Ability to work well with others is the final intangible attribute considered in the survey and the results are presented in Table 6. Again, 97% of the respondents reported that their perception of the candidate as achieved through personal interviews was very useful (52%) or useful (45%) in their determination of a job candidate's ability to work well with others. No employer reported that the interview was not useful. Although the interview is more useful relative to nearly all measures considered in Table 6, one measure is not statistically different relative to the interview prior work or internship experience. When judging social skills, the personal interview is just as important as obtaining an internship.

Prior work or internship experience had 43% of employer respondents reporting that it was very useful and another 42% stating that it was useful in their evaluation of the job candidate's ability to work well with others. Finally, 55% found letters of recommendation and other personal references as very useful or useful in their evaluation. Nineteen percent reported extracurricular activities (such as involvement in intramural sports) as not useful, while 26% reported leadership positions held in academic organizations such as university clubs as very useful when determining a job candidate's ability to work well with others. Overall, membership in university organizations, extracurricular activities, and personal references are among the least useful measures of a candidate's ability to work well with others.

A Common Theme

There is a common theme across the responses to the survey: perception of the candidate as achieved through personal interviews is the most useful measure for an employer when assessing subjective characteristics of a job candidate. Over half of the employer respondents reported that their perception through personal interviews is very useful when determining a job candidate's number crunching skills, character, communication skills, and problem solving skills, and ability to work well with others. None of the respondents ranked interviews as not being useful in determining the job candidate's attributes.

The significance of the impression that the job candidate leaves during an interview highlights the importance of preparing students for job interviews conducted on campus and in off campus locations. Mock interviews are rather common practices on many campuses. This study underlines the importance of the mock interviews and other methods that are used by advisors to prepare students for real interviews. Other methods may include seminars on how to dress, how to introduce oneself, or how to answer hard questions.

Although the surveys showed that what goes on the transcript, such as GPA, honors, awards, activities, etc. is not as important as the impressions left through a personal interview; the entire college career of a student prepares them for these interviews. For example, taking certain courses, especially those involving oral presentations, provide students with communication skills they may employ in personal interviews. Making high grades and participating in university organizations help build confidence that can be utilized to succeed in personal interviews. It would seem a student's ability to answer hard test questions helps prepare them for hard interview questions as well. In short, a student's entire college career helps prepare them for the important interview.

Summary

Employers make hiring decisions based on the perceived attributes of job candidates; such as number crunching skills, character, communication skills, problem solving skills, and ability to work well with others. How do employers form these perceptions? This question was addressed using an internet survey of 72 employers of agricultural college graduates. Employers were given an attribute, like character, and a list of potential measures of character. Potential measures may include performance during the personal interview, grades, and courses listed on the transcript. By far, employers identified the personal interview as the most useful measure of a job candidate's qualifications regardless of the attribute considered. These results suggest efforts to prepare students for interviews, such as mock interviews and tips, provide a valuable student service.

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