

Research

Job Attribute Preferences of Undergraduate Agricultural Majors—Do They Match with Careers in Grain Merchandising?

Keith D. Harris^a and Brian C. Briggeman^a^a*Kansas State University*

JEL Codes: A22, Q10, Q13

Keywords: Conjoint survey, grain merchandising, job preferences, willingness to accept

Abstract

The purpose of this study is to gain a better understanding of student job attribute preferences for grain merchandising careers. Undergraduate students in the College of Agriculture at Fort Hays State University and Kansas State University responded to a choice-based conjoint survey that captures students' expectations about grain merchandising careers. Parameter estimates from a conditional alternative specific constants logit model are used to estimate willingness to accept changes in salary for preferred job attributes. Results suggest that students have strong preferences for working in rural locations and working at smaller companies and have professional growth opportunities. The students exhibited less of a preference for frequent performance feedback and oral communication, and a focus on risk management and analysis. These results should inform faculty advisors of the important attributes of grain merchandising and help agribusinesses to improve employee recruitment techniques and employee retention.

1 Introduction

Of the many career alternatives available for students enrolled in agricultural economic undergraduate programs, some will pursue careers in the merchandising of agricultural commodities. A grain merchandiser manages commodity price risk; executes futures, options, spot, and forward contracts; and arranges transportation and storage. Although students can learn the underlying structures and functions of grain merchandising from college, most training is on the job. Thus, with little or no practical experience, an undergraduate student rarely understands this career path. Additionally, employers including agricultural cooperatives, grain processing, and food companies have full knowledge of grain merchandising, but know less about the aspects of the job that undergraduate students may find appealing. Thus, employers and potential job candidates have incomplete information about one another. The differences between the employers and job candidates provides an opportunity to learn what is important to the employer and which workplace and social trade-offs students are willing to make to work as grain merchandisers.

This labor study focuses on better understanding student job attribute preferences for grain merchandising careers. Insights from this study also provide guidance for advisors who are helping students pursue this career path. The primary research question for this study was: how well do student job attribute preferences match with a career in grain merchandising? Support for this research question was found generally in the academic literature and specifically among practitioners interested in recruiting, selecting, and retaining grain merchandising employees (Marchant and Zepeda 1995; Wachenheim and Lesch 2004; McGraw et al. 2012). Employers look for the hard skills of futures market risk management, as well as soft skills to communicate with clientele, solve day-to-day organizational problems, and discern from a variety of market information sources (Kliethermes, Parcell, and Franken

2011). The findings of this study could inform students of companies' recruitment processes and advance the advisor/advisee discussion of alternative career opportunities.

A literature review revealed multiple theoretical perspectives on the development of employees, particularly among human capital theory, transaction cost theory, and resource-based view (RBV) theories of the firm. Common to each theory is the theme of an intentional approach to individual choices and to long-term human resource development by an organization. Human capital theory links investment in the organization's key asset—employees—to increased productivity through the development of knowledge, skills, and ability in order to sustain a competitive advantage (Becker 1962; Schultz 1970; Smith 1998). Transaction cost theory examines why firms organize internally what might otherwise be conducted in the marketplace (Coase 1937). According to this theory, transaction-specific assets can also be human in nature, in the form of asset specificity of knowledge or skill (Anderson 1985).

As with other types of special purpose assets, transaction-specific human assets represent a source of value unique to a particular firm. This is consistent with RBV theories of the firm. The focus of RBV theories is on an organization retaining and developing human resources that are valuable, rare, and difficult to imitate, further enhancing the organization's competitive advantage (Penrose 1959; Barney 1991; Walton and Gupta 1999; Garavan et al. 2001). Studies on human capital, transaction costs, and RBV suggest that human resources are a source of competitive advantage for any organization. The three theories generally converge to determine both employee and firm-level outcomes. Although a review of each of these frameworks is beyond the scope of this study, it has been long and widely asserted that employees are the preeminent organizational resource and key to achieving outstanding performance.

To more fully understand students' preferences for careers as grain merchandisers, a survey using a choice-based conjoint experiment was designed to capture students' expectations about grain merchandising careers. Students' preferences for grain merchandising job attributes were estimated using a conditional alternative specific constants logit model, and parameter estimates were used to estimate willingness to accept (WTA) changes in salary for preferred job attributes. The attributes considered in this study were as follows: firm size, performance feedback, work location, professional growth opportunities, risk management analysis, risk preferences of the company, behavior preferences of the company, and salary. Few empirical research studies have been conducted on the expectations of the employer and employee for grain merchandisers. The study closely resembles duties of grain merchandisers, and the conjoint experiment helps to elicit responses from respondents concerning preferences for those duties. Therefore, the results of this study should benefit employers and help them recruit new employees.

Results from the conjoint survey suggested that rural grain-marketing agribusinesses offered job attributes that were appealing to many students. Students that responded to the survey had strong preferences for working in rural locations and for working at smaller companies. Furthermore, the students preferred to work for companies that afforded them the opportunity for professional growth. These findings should assist rural agribusinesses in recruiting and retaining the best grain merchandising talent to maintain their human capital comparative and competitive advantages. Furthermore, these results provide faculty advisors the key attributes of a grain merchandising job. A set of questions was created to provide advisors with a method of identifying advisees who might show an interest in a grain merchandising career.

2 Methods to Assess Preferences for a Grain Merchandising Job

Agribusinesses hiring employees with the ability to perform specific tasks is important, but the employee's abilities in other general areas, such as technical and communication skills, are also important to firms' success (Wachenheim and Lesch 2004; Ibnu et al. 2015; Meyerding 2018). In this study, a choice-based conjoint analysis was used whereby students selected the most appealing grain merchandising jobs that had varying specific and general attribute levels. Results from this choice experiment should inform faculty

advisors of the important attributes of grain merchandising and help agribusinesses to improve employee recruitment techniques and employee retention.

Conjoint analysis is an established approach for understanding attribute trade-offs and choices in marketing research (Gracia, Loureiro, and Nayga 2009) and is consistent with random utility theory (McFadden 1974). Choice experiments assume that the utility of a good can be derived from different product attributes, that participants' choices are rational, that participants seek to maximize utility subject to innate stable preferences, and that participants have perfect discrimination capabilities (Lancaster 1966; Lancsar and Savage 2004).

To assess student preferences, this study used a conjoint survey to uncover the attributes that appealed to the students relative to the organizational, social/behavioral, and technical aspects of a grain merchandising job. Regression techniques were employed to model students' choices as a function of the attributes of the grain merchandising job. The students' choices, over several alternatives, were analyzed to deduce the relative importance of these attributes. When the students were forced to make difficult trade-offs, what they truly valued could be determined (Boyer, Briggeman, and Norwood 2009). The significance and magnitude of regression coefficients indicate the relative importance of the attributes that influenced the respondents' choices. Estimates provide insight into the value that students place on each aspect of the job and allow inferences to be drawn from various grain merchandising job scenarios.

2.1 Survey Construction

The examined job attributes previously mentioned were used to determine students' interests in a grain merchandising career. To evaluate respondents' preferences for job attributes inherent to companies that employ grain merchandisers, the survey questions were developed with input from merchandising practitioners. The attributes used in the conjoint analysis were developed from a series of industry meetings and investigations from reviewing job descriptions and from having discussions with early-career and seasoned grain merchandisers employed in multinational grain companies and farmer cooperatives. The technical or professional attributes included the extent to which the respondent valued the merchandising skills required by the firm and the respondents' disposition toward acquiring these skills (Kliethermes et al. 2011). The attributes and attribute levels used in the conjoint analysis are listed in table 1.

The first attribute, company size, focused on the number of employees, ranging from small (less than 50), to medium (between 50 and 250), to large (greater than 250 employees) sized companies. Barber et al. (1999) found that the size of the company was a significant factor for individuals in the job market. The second merchandising attribute, performance feedback, was particularly important and examines if new employees prefer autonomy, accountability, and less frequent feedback on the job. The students were asked to choose between weekly (more frequent) or monthly (less frequent) interactions with a supervisor. The third attribute was work location. One characteristic that is especially important for agricultural students is the location of the company. Marchant and Zepeda (1995) and McGraw et al. (2012) found that agricultural students had a strong preference for working in a rural location.

The fourth attribute, professional growth opportunities, was included to measure students' preference for future job promotions and professional development prospects. For instance, "Yes" indicates the job offer's professional growth opportunities. A "None" option indicates there is no opportunity for professional growth. The fifth attribute, oral communication, examined students' penchant for communicating in person or by telephone compared with a preference for other information and communication technologies such as text messaging or email. The "Yes" attribute level for oral communication indicates oral communication is required and "No" for no required oral communication. Risk management and analysis is the sixth attribute and is a task often used by grain merchandisers. The attribute was explained as an "interest in understanding future and option markets." The "Yes" or "No" attribute levels for risk management analysis indicate whether respondents prefer job duties that include dealing with risk management tasks, such as futures markets, basis, and hedging.

Table 1. List of Attributes and Attribute Levels for Grain Merchandising Job Choice Tasks

Attributes of Merchandising	Attributes Levels
1. Company Size	Small, Medium, Large
2. Performance Feedback	Weekly, Monthly
3. Work Location	Micropolitan (Rural) Area, Metropolitan (Large City) Area
4. Professional Growth Opportunities	Yes, None
5. Oral Communication	Yes, No
6. Risk Management and Analysis	Yes, No
7. Behavior Preference	Assertive, Appeasing
8. Risk Preference	Risk Neutral, Risk Taker
9. Salary	\$35,000; \$45,000; \$50,000; \$55,000; \$60,000

The seventh attribute was behavior preference. Consultations with various companies revealed that each company tended to have one of two cultures. These cultures represented two behavioral attribute levels: “assertive” and “appeasing.” Assertive behavior is described as the confidence to make and defend a decision, while appeasing behavior is described as acceding a decision to an ongoing trading partner to avoid conflict or end a disagreement.

The eighth attribute was risk preference. When faced with this attribute, students were encouraged to consider their attitudes toward risks. Risk is a key factor in decision-making behavior. Attribute levels of risk-taking and risk-neutral behavior reflected students’ risk preference and conveyed whether a student preferred an employer who pursued riskier or safer trading decisions to buy, sell, or store grain. For instance, a student might view an employer’s penchant for more rules and procedures as a way for managers to intervene, which minimizes the risky behavior in the organization. The final attribute was the starting annual salary. The attribute levels of \$35,000, \$45,000, \$50,000, \$55,000, and \$60,000 reflect a range similar to the paid compensation for new grain merchandisers.

A fractional experimental design was used to construct choice tasks to elicit preferences among combinations of job attribute levels. The attribute levels, shown in table 1, could be combined into a full factorial design of $1,920 = (2^7 \times 3 \times 5)$ possible choice profile configurations, which was too large for practical use. Thus, Sawtooth Software (Version 8.4.5, Orem, UT) was used to create the survey design. Johnson et al. (2013) report that the balanced-overlap method used by Sawtooth Software identifies a randomized design that ensures a well-balanced and orthogonal fraction of the full factorial design. The software designs a large set of choice tasks (3,600 tasks for this experiment from the full factorial) and then randomly selects from this set of choice tasks to form unique blocks (for each respondent) that maintains orthogonality and maximizes design efficiency. The design consisted of twelve choice tasks (per block) for each respondent. Within each choice task, students chose among three options: merchandiser job A, merchandiser job B, or the opt-out or “None” option. Within each job choice, combinations of nine attributes and their levels the software used to design the experiment allows for orthogonality to be maintained and the identification of all main and potential interaction effects (Kuhfeld, Tobias, and Garratt 1994). Figure 1 shows a sample choice task completed by student respondents.

Attribute	Job A Opportunity	Job B Opportunity	Job C Opportunity
Company Size	Less Than 50	More Than 250	Neither Job “A” or “B” is appealing.
Performance Feedback	Yes	No	
Work Location	Rural Area	Large Metropolitan	
Professional Growth Opportunities	None	Yes	
Oral Communication	Yes	No	
Risk Management and Analysis	Yes	No	
Behavior Preference	Assertive	Pleasing	
Risk Preference	Yes	No	
Starting Annual Salary	\$45K	\$50K	
Please Select the Most Preferred Opportunity	Select	Select	

Figure 1: Sample Choice-Based Conjoint Grain Merchandising Job Choice Task

The survey began with a definition of grain merchandisers as follows: “agribusiness firms involved in the procurement, handling, storing, and re-distribution and processing of grain. These firms include country grain elevators, cooperatives and noncooperatives, shippers and exporters, processors, and feeders.” Each grain merchandising employment opportunity was presented as being advertised by an agribusiness firm that was reputable, financially stable, and positioned for future growth.

The survey used questions related to relationships that best demonstrated how the student was influenced by their social environment. The questions also aimed to identify which characteristics were universal across the sample of students. The questions included descriptions of the students’ academic institutions, their coursework, the people who influenced their decisions, their hometown, and their preference for work location.

2.2 Survey and Data

Undergraduate students majoring in agricultural economics or agribusiness management from Fort Hays State University and Kansas State University were sampled for this study. These universities were selected based on their agricultural and natural resource programs, as well as their willingness to share student email addresses. Furthermore, these two universities provided a unique sample of student populations. Fort Hays State University’s agricultural student enrollment in 2018 was 386, which was considerably smaller than Kansas State University’s 2018 agricultural student enrollment of 2,512. Even though there is

a notable size difference, the agricultural students at each university follow a similar curriculum. Although having additional universities in the data might improve the representativeness of the data, being able to compare and contrast these two related, yet different universities could provide unique insights into student perceptions of a grain merchandising career.

All students received an email cover letter describing the intentions of the survey and an email containing a link that led them to the choice survey. The first reminder was emailed five days after the initial communication, and a second reminder notification was sent two days later. To further increase the response rate, all survey respondents were entered into a drawing to win one of three \$100 Visa gift cards.

A total of 170 students completed the survey. To arrive at a sample of usable responses, the following respondents were eliminated: (1) inconsistent respondents; (2) survey time outliers or respondents who spent less than 1 minute taking the survey (which was 2 standard deviations below the average survey time of 11 minutes; support for removing these outliers was found in Greszki, Meyer, and Schoen [2015])¹; and (3) missing value responses. A total number of 153 usable responses remained, which resulted in a 30.1 percent response rate.

Table 2: Descriptive Statistics of Respondents

Variable	N	Frequency
Class Rank:		
Freshman	153	0.07
Sophomore	153	0.11
Junior	153	0.37
Senior	153	0.45
Gender:		
Male	153	0.64
Female	153	0.36
I was raised in a:		
Rural Location	153	0.89
Urban Location	153	0.11
How would you describe your academic institution?		
Junior College	153	0.01
Smaller to Midsized University	153	0.40
Larger University	153	0.59

Descriptive statistics for the sample are reported in table 2. The respondents had a higher representation of third-year and fourth-year students. Junior and seniors made up 82 percent of the sample, while freshmen and sophomores comprised the remaining 18 percent. Nearly 65 percent of the respondents were male, and the vast majority (89 percent) of those who responded to the survey grew up in a small rural town. About 60 percent of the sample attended the larger university (Kansas State University), while 40 percent of the respondents attended the smaller university (Fort Hays State University).

¹ The response behavior of individual respondents varies considerably during a survey. For each respondent to the web survey, we are able to see the amount of time each respondent spent on each task. According to Greszki et al. (2015), too fast responses, in web surveys indicate low data quality, and evidence indicates that removing “too fast” responses does not alter marginal distributions. The impact on the explanatory models yield negligible coefficient differences.

A set of questions was presented to the students to assess their interests in the career field and type of organization and their preference for a merchandising career across various agricultural commodities. company, whereas 30 percent did not prefer the type of firm that was engaged in grain merchandising (table 3). Of the respondents, 78 percent identified a medium to high interest in a grain merchandising career path. The respondents also chose a commodity they would prefer to focus on for their career. The vast majority of students preferred to work with grains and livestock, while very few students preferred to work with dairy, energy, or transportation.

Table 3: Descriptive Statistics of Respondents Willing to Pursue a Career in Merchandising

Variable	N	Frequency
How would you describe your interest in pursuing a career in grain merchandising?		
Low	153	0.22
Medium	153	0.54
High	153	0.24
I'd prefer to start a career in merchandising:		
Cooperative	153	0.30
A Grain Company (Not a Cooperative)	153	0.21
A Food Company	153	0.03
A Trading Company	153	0.16
It Does Not Matter	153	0.30
Commodity Preferences for Work Focus (Select All That Apply)		
Grain (Wheat, Soybeans, Corn, Rice)	153	0.34
Live Animals/Animal Proteins (Cattle, Swine, Poultry)	153	0.27
Dairy (Milk, Cheese, Butter)	153	0.05
Feed Ingredients (DDGs, Wheat Midds, Soybean Meal, etc.)	153	0.16
Energy (Gas, Electricity, Oil)	153	0.09
Freight (Trucks, Rail Barge)	153	0.09

2.3 Empirical Model

To conceptualize the j^{th} student's decision to pursue the i^{th} job that fit his or her employment expectations, an indirect utility function was assumed of the form: $U_{ij} = V_{ij} + \varepsilon_{ij}$, where U_{ij} is the unobservable utility that student j associates with job choice i ; V_{ij} is the systematic (explainable) component of the utility individual j associates with alternative i ; and ε_{ij} is the random (unexplained) component associated with individual j and choice i . The study assumed individual students would choose the i^{th} alternative if the utility derived from that alternative was greater than the utility derived from any other alternatives in a choice set.

The systematic component of utility was assumed to be linearly additive of the form:

$$V_{ij} = \alpha_j + \beta_1 Large_{ij} + \beta_2 Feedback_{ij} + \beta_3 Rural_{ij} + \beta_4 ProfGrowth_{ij} + \beta_5 Behavior_{ij} + \beta_6 RiskTaker_{ij} + \beta_7 RiskAnalysis_{ij} + \beta_8 OralComm_{ij} + \beta_9 Salary_{ij} + \varepsilon_{ij} \tag{1}$$

The coefficients, β_n , $n = 1, \dots, 9$, represent the marginal utilities of the job attributes associated with grain merchandising, as described in table 1. Alternative specific constants (α_i) were included in equation (1) to capture preferences for those students that may have preferred any available grain merchandising job option and also to capture preferences for those that did not prefer a grain merchandising job (the opt-out option). Most of the attributes were binary and were incorporated as dummy variables, with “1” indicating the presence of a job attribute and “0” indicating otherwise. To help with the ease of interpretation, company size, *Large*, was entered into the model as “1” indicating a large company and “0” otherwise.² The remaining binary variables in equation (1) are now described relative to the presence of the attribute or the binary variable equals “1.” *Feedback* indicates frequent performance feedback. *Rural* is for a rural work location. *ProfGrowth* means the job offers professional growth opportunities. *Behavior* indicates the job requires an assertive behavior. *RiskTaker* refers to a job that prefers a risk-taking preference. *RiskAnalysis* means the job requires risk management analysis. *OralComm* indicates oral communication is a requirement in the job. *Salary* refers to entry-level remuneration. Finally, assuming ε was distributed mean zero extreme value Type 1, an alternative specific constant conditional logit model was estimated where the base alternative was the option of neither grain merchandising job being selected (i.e., an opt-out option).

Coefficient estimates in the model capture students’ preferences. As such, the present study was a labor supply study as opposed to a demand side study. Therefore, the expectation was that the sign of β_9 on *Salary* would be positive. To estimate WTA or students’ marginal willingness to substitute initial salary for preferred job attributes, the estimated β of a given job attribute was divided by the absolute value of β_9 , the coefficient on initial starting salary (Ryan, Gerard, and Amaya-Amaya 2008). For example, assume the parameter estimate on *Large* was positive. That would yield a positive WTA measure, which would be interpreted as the student is willing to forgo \$X of salary to work for a larger company. If the *Large* parameter estimate was negative, then the negative WTA measure would be interpreted as the student would need to receive \$X additional salary to work for a larger company. Interpretation of the significance of job attributes focuses students’ WTA or acceptance of salary trade-offs that enables them to receive preferred job attributes.

The average WTA for all data is insightful but gaining additional insights from a subsample helps to capture how respondents differ on the appealing aspects of the job. The first subsample are those students who have a high interest in a grain merchandising career versus those who do not have a high interest. The second subsample are those students who attend a large university versus those who attend a smaller university. Estimating WTA for these subsamples illustrates the heterogeneity in preferences across students. These differences could affect how we understand their interests in the career path.

3 Results

Conditional alternative specific constant logit models were estimated to identify the most highly preferred grain merchandising job attributes. To examine the heterogeneity of the students’ preferences, separate conditional logit models were estimated on various subsamples of the data as well. Estimating separate models allowed for straightforward comparisons of the various parameter estimates for each subsample.³ Table 4 presents the results for the base model, which suggests a high interest in working as a grain

² Conditional logit models were estimated using the other dummy variables as *Large* = 1, *Medium* = 1, and 0 otherwise as well as *Large* = 1, *Small* = 1, and 0 otherwise. In each instance, *Large* was the only statistically significant variable among these dummy variable combinations.

³ Given the data were collected via a conjoint survey, and according to Hoffman and Duncan (1988), a conditional logit model is estimated because it is preferred over a multinomial logit. To account for the differences across student characteristics, a full conditional logit model with interaction effects could be estimated. However, estimating separate conditional logit models for each subsample of data results in the same model findings as the full conditional logit model. Furthermore, the separate model approach allows for easy comparisons of the parameter estimates across subsamples.

Table 4: Alternative Specific Constant (ASC) Conditional Logit Estimation Results for Grain Merchandiser Job Attributes

Job Attribute Variables	Base Model (Full Sample)		High Job Interest (Subsample)		Lower Job Interest (Subsample)		Large University (Subsample)		Small University (Subsample)	
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Larger Company Size	-0.20*	0.04	-0.22*	0.08	-0.19*	0.05	-0.21*	0.06	-0.17*	0.07
More Frequent Performance Feedback	0.12	0.06	0.01	0.12	0.15	0.08	0.05	0.08	0.21*	0.10
Rural Work Location	1.13*	0.07	0.41*	0.13	1.40*	0.08	1.09*	0.09	1.21*	0.11
Professional Growth Opportunities	0.43*	0.06	0.34*	0.13	0.50*	0.08	0.47*	0.08	0.38*	0.10
Assertive Behavior Preference	0.04	0.06	-0.14	0.13	0.07	0.08	0.08	0.08	-0.04	0.10
Risk Taker Preference	-0.16*	0.06	-0.11	0.13	-0.17*	0.08	-0.28*	0.08	0.01	0.10
Risk Management Analysis Is in the Job	0.08	0.06	0.20	0.13	0.02	0.08	0.09	0.08	0.06	0.10
Oral Communication Required	0.11	0.06	0.07	0.12	0.12	0.08	0.14	0.08	0.06	0.11
Salary (\$1,000)	0.07*	0.004	0.08*	0.009	0.07*	0.005	0.07*	0.006	0.07*	0.007
ASC Job 1	1.79*	0.15	2.21*	0.30	1.67*	0.18	2.01*	0.21	1.51*	0.24
ASC Job 2	1.78*	0.16	2.33*	0.30	1.61*	0.18	1.99*	0.21	1.49*	0.24
$\log L (0)$	-1,455.45		-387.20		-1,040.60		-846.49		-603.25	
$\log L (\max)$	-1,417.43		-381.04		-1,008.47		-824.74		-586.55	
Wald χ^2 statistic	427.91		86.35		363.71		254.18		175.49	
Number of observations	5,508		4,140		1,368		2,232		3,276	
Number of student respondents	153		115		38		62		91	

Note: Each set of parameter estimates, and standard errors are tied to a particular data set. Base model is the full data; high job interest indicates that the student has (=1) or does not have (=0) a high interest in a grain merchandising job; large university indicates the student stated that they attend (=1) or do not attend (=0) a large university.

* Indicates statistical significance at the 5 percent level.

merchandise, irrespective of the size of the students' university. Table 5 shows calculations concerning the salary a student would be willing to accept or forgo for a particular job attribute level.

3.1 Base Model (Full Sample of Respondents)

The results of the base model (table 1) suggested that agricultural students preferred to work in rural areas. The average WTA to accept a lower salary to work in a rural location was \$16,143. Part of this preference was likely tied to a lower cost of living in a rural location compared with an urban location. This result could be tied to a preference for a rural lifestyle. Identifying the exact reason was not within the scope of this study. Regardless, of all of the job attributes shown to the students, the highest WTA was for the ability to live and work in a rural area.

Students showed a strong preference for an employer that offered professional growth opportunities. On average, the survey sample was willing to choose jobs that paid \$6,143 less in salary if the company provided opportunities to further their career. Presumably, students were anticipating that, if the company enhanced their job skills, this would open future possibilities for promotions or other ways to make up the forgone salary.

In the base model, students did not prefer two of the job attributes: companies larger in size and companies with a perceived higher risk-taking work environment. In each case, an increase in the average annual salary that students had to receive to prefer these jobs was about \$3,000.

3.2 Subsample Results for Respondents by Level of Job Interest

The data provided additional insight about students' interest levels in working as grain merchandisers. The differences between having interest for the job or not a priori provided some insight into students' motivations to pursue this career path. The most striking difference between those with a high interest and those without was in preference for work location. Both groups of students preferred to work in a rural location and were willing to accept a lower salary to work there. However, those with a strong interest in working as grain merchandisers were only willing to forgo an average of \$5,125 in salary to work in a rural location. Those without interest were willing to forgo \$20,000 in salary. Furthermore, the 95 percent confidence intervals of these two WTA measures are statistically different from each other. Potentially, if the preference to live in a rural location is strong enough, it might be possible for rural employers to recruit students who do not have an interest in a grain merchandising career. Of course, more research is necessary to understand the motives of students who do not have a high interest in a particular career but have a strong preference to live in a rural area.

The preference estimate was significant and positive for professional growth opportunities among respondents with interest in the career. Students were willing to accept \$4,250 less in salary if professional growth opportunities were available. The subsample model parameter estimates were statistically significant and negative for company size and the risk-taking attribute. In the subsample, students did not prefer working for larger companies with a preference for taking risks. A prospective employer would have to compensate for these less desirable job attributes by offering \$2,750 more in annual salary for students to work in a larger company and \$1,375 for students to work for a risk-taking company.

3.3 Subsample Results for Respondents by University Size

Agricultural students with preferences to work for a small company, in a rural work location, with professional opportunities, and with fewer risk-taking activities were consistent for students attending larger and smaller universities. Some significant differences did emerge. The WTA estimates in table 5 suggest that students from a smaller university had a stronger preference to live in a rural area compared with students attending a larger university. Students at the larger university would accept a salary of \$6,714 less to work for a company with professional growth opportunities, whereas students at the smaller university were willing to accept \$5,429 less if professional growth opportunities were available on the job.

Table 5. Salary Trade-off Estimates for Grain Merchandising Job Attributes

Job Attribute Variables	Base Model (Full Sample)	High Job Interest (Subsample)	Low Job Interest (Subsample)	Large University (Subsample)	Small University (Subsample)
Larger Company Size	-\$2,857 [-\$4,083, - \$1,606]	-\$2,750 [-\$4,956, -\$696]	-\$2,714 [-\$4,208, -\$1,263]	-\$3,000 [-\$4,697, -\$1,462]	-\$2,429 [-\$4,357, -\$535]
More Frequent Performance Feedback	\$1,714 [-\$75, \$3,530]	\$125 [-\$2,873, \$3,236]	\$2,143 [-\$27, \$4,300]	\$714 [-\$1,631, \$3,032]	\$3,000 [\$229, \$5,891]
Rural Work Location	\$16,143 [\$13,826, \$18,699]	\$5,125 [\$2,035, \$8,448]	\$20,000 [\$16,948, \$23,429]	\$15,571 [\$12,414, \$18,574]	\$17,286 [\$13,326, \$21,220]
Professional Growth Opportunities	\$6,143 [\$4,268, \$8,100]	\$4,250 [\$1,081, \$7,485]	\$7,143 [\$4,805, \$9,455]	\$6,714 [\$4,238, \$9,186]	\$5,429 [\$2,360, \$8,383]
Assertive Behavior Preference	\$571 [-\$1,238, \$2,368]	-\$1,750 [-\$4,883, \$1,372]	\$1,000 [-\$1,120, \$3,180]	\$1,143 [-\$1,150, \$3,502]	-\$571 [-\$3,373, \$2,324]
Risk Taker Preference	-\$2,286 [-\$4,161, -\$500]	-\$1,375 [-\$4,608, \$1,669]	-\$2,429 [-\$4,655, -\$282]	-\$4,000 [-\$6,407, -\$1,582]	\$143 [-\$2,793, \$2,885]
Risk Management Analysis Is in the Job	\$1,143 [-\$725, \$2,913]	\$2,500 [-\$616, \$5,693]	\$286 [-\$1,832, \$3,895]	\$1,286 [-\$1,012, \$3,676]	\$857 [-\$2,065, \$3,660]
Oral Communication Required	\$1,571 [-\$276, \$3,361]	\$875 [-\$2,172, \$3,979]	\$1,714 [-\$472, \$3,895]	\$2,000 [-\$342, \$4,359]	\$857 [-\$2,066, \$3,637]

Note: Estimates are calculated by taking a job attribute variable parameter estimate from table 4 and dividing it by the salary parameter estimate. Then, this ratio is multiplied by \$1,000 because the salary parameter estimate is show in \$1,000s. Number in brackets are the 95% confidence interval estimated using the Delta method.

Additional differences were identified between students at each university. Students at a smaller university had a stronger and statistically significant preference for more frequent performance feedback. These students were willing to accept a \$3,000 lower salary, whereas their larger university student counterparts had a statistically insignificant estimate of \$714. Students at a larger university exhibited a strong preference to work for a company that did not have a risk-taking preference. These students would require an additional \$4,000 of salary to accept that position, whereas their smaller university student counterparts had an estimate nearly equal to \$0.

It appears there are differences between the agricultural student populations at these two universities. Potentially the student motivations for attending a smaller or larger university play a role in this estimated WTA salary differences. Possibly there are other reasons. More research is necessary to identify why these differences exist.

3.4 Job Attribute Preference Rankings

Finally, part-worth utilities were examined to identify which job attributes were most preferred by student respondents. Using the alternative specific constant model parameter estimates, the part-worth utilities were calculated for each attribute level. The relative importance scores were then calculated so that all scores summed to 100 percent. Therefore, if each attribute was considered equally important, each relative importance score for the nine attributes would approximately equal 11 percent.

Table 6 shows the average relative importance scores for each attribute and ranks them based on order of preference. The most preferred attribute was salary, with a relative importance score of 37.6 percent. Next was rural work location at 31.1 percent, followed by available professional growth opportunities at 12.3 percent. All other attributes and levels were not as important to the students, which suggest students may not have been aware of each attribute's importance to grain merchandising, or students were not aware of the day-to-day aspects of communication, risk management, assertive behavior, and frequent performance feedback.

4 Conclusions and Recommendations

Employee selection is important for a company's success, and poor recruitment practices can result in financial losses. For example, if a candidate's competency is not accurately assessed, the candidate may make mistakes that can hinder productivity. If a new employee needs to be retrained or replaced, this takes up more company time that could otherwise be invested toward advancing other employees.

The purpose of this study is to help employers better understand students' desires about grain merchandising jobs. The results showed that students preferred a job in a rural location and provided professional growth opportunities. The students exhibited less of a preference for frequent performance feedback, oral communication, and a focus on risk management and analysis. Results showed that students valued the more nontechnical aspects of grain merchandising positions. In fact, many industry professionals have stated that grain merchandising is largely a relationship business (Kliethermes et al. 2011).

Heterogeneity within the student sample did yield some differences. Student preferences for a lower salary varied considerably across interest level in the profession and across university size. This suggested that students placed differing values on professional growth opportunities, prospects for high future earnings, and work location. Large and meaningful differences between attributes should help clarify and direct a talent management strategy. This study found that respondents agreed that salary and work location were the most important factors in choosing a career in merchandising. The findings also suggested that nonfinancial attributes influenced students' interests in pursuing prospects with a small company with professional growth opportunities.

The nonfinancial aspects of job choice tended to be firm-specific, suggesting that employer's recruitment plans should involve these attributes in a manner that is attractive to potential employees. Results suggested that a focused effort is needed to emphasize the attractiveness of the position through

Table 6: Relative Importance of Grain Merchandising Job Attributes

	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9
Job Attribute	Salary	Work Location	Professional Growth Opportunities	Risk Preference	Company Size	Performance Feedback	Oral Communication	Risk Management Analysis	Behavior Preference
Preference Ranking	37.6%	31.1%	12.3%	4.7%	4.0%	3.6%	3.2%	2.3%	1.2%

Note: Preference rankings were calculated using the relative importance of attribute part-worth utilities for each student respondent and then calculating the average.

its job attributes. Employers should emphasize the opportunities available to new grain merchandisers within the company and describe the career paths of some of the recent hires.

Employers should be mindful of how to help new employees develop a greater comprehension for the least preferred job attributes. For instance, employers could make hard-skill training opportunities available to reinforce the importance of risk management and analysis. Or, employers could provide soft-skill development opportunities that reinforce assertiveness, which is needed to defend commodity trading decisions made under uncertain market conditions.

Not only should companies take advantage of these results, but knowing the job attributes should also help academic advisors lead a student who exhibits these preferences toward a career in grain merchandising. Academic advisors should present career options that cause the student to think carefully about their goals. For example, the student's attention could be drawn to the attributes that are related to grain merchandising and often evaluated by employers. Instruction must include not only the technical aspects of the career field but the unique professional and social aspects of grain merchandising, as well.

Similar to Howe and Strauss (2000), an academic advisor could use these results to impress upon their advisees the importance of technical and more general skills. However, some deficit areas may exist among advisees that could hinder their ability to reach their career goals. Although identifying these deficit areas is beyond the scope of this paper, it is well within the objective of the paper to pose some questions an advisor could ask to help start and even lead the conversation with an advisee. Here are a set of questions based on the research that an academic advisor could use:

1. What are your strengths and weaknesses, and how well do they match up with the job attributes of grain merchandising?
2. What concepts or ideas do you want to know more about?
3. How desirable is it for you to live in a rural location?
4. As a follow-up to the previous question, have you considered a career in merchandising?
5. If money were not an issue, would you like to be a grain merchandiser for five years after graduation?
6. How desirable are professional growth opportunities in a career?

Guiding students to find answers to these difficult questions will help them align their ambitions and set realistic expectations. Faculty advisors can assist in the development of a career mind-set that is resilient and a career trajectory that can adapt to changes and take advantage of unplanned as well as sought-after opportunities. In short, faculty and those in the industry should use these results to better understand students' preferences for aspects in a grain merchandising career.

This study has some limitations. The sample included only students in colleges of agriculture. Since early-career entrants in merchandising are recruited from other academic disciplines as well, the findings cannot necessarily be generalized across other disciplines. The extent to which the results would generalize to other populations is unknown, as data were collected from students who were new labor-market entrants. College recruitment is a major source of hiring for new labor-market entrants, and firms devote considerable resources to improving their reputation on college campuses. Steps were taken to maximize the realism and generalizability of the study while retaining the clear advantages of an experimental design. Relevant job attributes were taken directly from grain merchandisers from different-sized firms to improve the realism and generalizability of social, professional, and behavioral career aspects. Another strength of this study was the integration of discrete choices through involving job scenarios and using a multivariate technique that was useful to examine trade-offs made by individual respondents who were facing a range of options.

Acknowledgements: For the financial support from Co-Bank and cooperative research from the Arthur Capper Center at Kansas State University and Dr. Craig Smith at Fort Hays State University, the authors are grateful for their contributions to this study. The study was supported by the Committee on Research Involving Human Subjects/ Institutional Review Board for Kansas State University (IRB Application #7935).

About the Author(s): Keith Harris is an Associate Professor in the Department of Agricultural Economics at Kansas State University (Corresponding author email: kdharris@ksu.edu). Brian Briggeman is a Professor and Director of Arthur Capper Cooperative Center in the Department of Agricultural Economics at Kansas State University.

References

- Anderson, E. 1985. "The Salesperson as Outside Agent or Employee: A Transaction Cost Analysis." *Marketing Science* 4(3):234–254.
- Barber, A.E., M.J. Wesson, Q.M. Roberson, and M.S. Taylor. 1999. "A Tale of Two Job Markets: Organizational Size and Its Effects on Hiring Practices and Job Search Behavior." *Personnel Psychology* 52:841–867.
- Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17(1):99–120.
- Becker, G.S. 1962. "Investment in Human Capital: A Theoretical Analysis." *Journal of Political Economy* 70(5), Part 2:9–49.
- Boyer, T.A., B.C. Briggeman, and F.B. Norwood. 2009. "Demand for Multimedia in the Classroom." *Journal of Agricultural and Applied Economics* 4:791–808.
- Coase, R.H. 1937. "The Nature of the Firm." *Economica* 16:386–405.
- Garavan, T.N., M. Morley, P. Gunnigle, and E. Collins. 2001. "Human Capital Accumulation: The Role of Human Resource Development." *Journal of European Industrial Training* 25(2/3/4):48–68.
- Gracia, A., M.L. Loureiro, and R.M. Nayga Jr. 2009. "Consumers' Valuation of Nutritional Information: A Choice Experiment Study." *Food Quality and Preference* 20(7):463–471.
- Greszki, R., M. Meyer, and H. Schoen. 2015. "Exploring the Effects of Removing 'Too Fast' Responses and Respondents from Web Surveys." *Public Opinion Quarterly* 79(2):471–503.
- Hoffman, S.D., and G.J. Duncan. 1988. "Multinomial and Conditional Logit Discrete-Choice Models in Demography." *Demography* 25:415–427.
- Howe, N., and W. Strauss. 2000. *Millennials Rising: The Next Great Generation*. New York: Vintage.
- Ibnu, M., P. Glasbergen, A. Offermans, and B. Arifin. 2015. "Farmer Preferences for Coffee Certification: A Conjoint Analysis of the Indonesian Smallholders." *Journal of Agricultural Science* 7(6):20.
- Johnson, F.R., E. Lancsar, D. Marshall, V. Kilambi, A. Mühlbacher, D. Regier, B. Bresnahan, B. Kanninen, and J. Bridges. 2013. "Constructing Experimental Designs for Discrete-Choice Experiments: Report of the ISPOR Conjoint Analysis Experimental Design Good Research Practices Task Force." *Value in Health* 16(1):3–13.
- Kliethermes, B.J., J.L. Parcell, and J.R.V. Franken. 2011. "What to Teach Future Commodity Merchandisers: A Survey of Skills and Needs." *NACTA Journal* 55(3):19–27.
- Kuhfeld, W.F., R.D. Tobias, and M. Garratt. 1994. "Efficient Experimental Design with Marketing Research Applications." *Journal of Marketing Research* 31(4):545–557.
- Lancaster, K.J. 1966. "A New Approach to Consumer Theory." *Journal of Political Economy* 74(2):132–157.
- Lancsar, E., and E. Savage. 2004. "Deriving Welfare Measures From Discrete Choice Experiments: Inconsistency Between Current Methods and Random Utility and Welfare Theory." *Health Economics* 9:901–907.
- Marchant, M.A., and L. Zepeda. 1995. "The Agricultural Economics Profession at the Crossroads: Survey Results of Faculty Salary, Employment, and Hiring Prospects." *American Journal of Agricultural Economics* 77(5):1322–1328.
- McFadden, D. 1974. "The Measurement of Urban Travel Demand." *Journal of Public Economics* 3(4):303–328.
- McGraw, K., J.S. Popp, B.L. Dixon, and D.J. Newton. 2012. "Factors Influencing Job Choice among Agricultural Economics Professionals." *Journal of Agricultural and Applied Economics* 44(2):251–265.
- Meyerding, S.G.H. 2018. "Job Preferences of Agricultural Students in Germany: A Choice-Based Conjoint Analysis for Both Genders." *International Food and Agribusiness Management Review* 21(2):219–236.
- Penrose, E.T. 1959. *The Theory of the Growth of the Firm*. New York: Oxford University Press.
- Ryan, M., K. Gerard, and M. Amaya-Amaya. 2008. "Discrete Choice Experiments in a Nutshell." In *Using Discrete Choice Experiments to Value Health and Health Care*. Dordrecht: Springer, pp. 13–46.

- Schultz, T.W. 1970. "The Reckoning of Education as Human Capital." In *Education, Income, and Human Capital*. Cambridge MA: National Bureau of Economic Research, pp. 297–306.
- Smith, P.A.C. 1998. "Systemic Knowledge Management: Managing Organizational Assets for Competitive Advantage." *Journal of Systemic Knowledge Management* 4:12–24.
- Wachenheim, C.J., and W.C. Lesch. 2004. "US Executives' Views on International Agribusiness Education in the United States: An IAMA Membership Survey." *International Food and Agribusiness Management Review* 7(1):42–59.
- Walton, S.V., and J.N.D Gupta. 1999. "Electronic Data Interchange for Process Change in an Integrated Supply Chain." *International Journal of Operations & Production Management* 19(4):372–388.

1(1) doi: [10.22004/ag.econ.294010](https://doi.org/10.22004/ag.econ.294010)

©2019 All Authors. Copyright is governed under Creative Commons BY-NC-SA 4.0 (<https://creativecommons.org/licenses/by-nc-sa/4.0/>). Articles may be reproduced or electronically distributed as long as attribution to the authors, Applied Economics Teaching Resources and the Agricultural & Applied Economics Association is maintained. Applied Economics Teaching Resources submissions and other information can be found at: <https://www.aea.org/publications/applied-economics-teaching-resources>.