

Research Article

Juggling Students and Industry Needs: Redesigning an Academic Agribusiness Program

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Abstract

Changing student demographics, shifting expectations, and industry needs influence class offerings and curricula, particularly in business-related higher education. This study evaluates the alignment between academia and the expectations of students and industry stakeholders, with the aim of highlighting curriculum adjustments within an agribusiness program. A non-land-grant agribusiness program is used as a case study, utilizing senior exit surveys from 2012–2023 and recent focus group discussions with industry stakeholders. Quantitative and qualitative analyses of survey responses reveal that while students highly value hands-on learning and communication skills, they feel underprepared in experience-based skills such as agricultural policy and law. The industry analysis points out that practical learning prioritizing internships and digital competencies, such as AI and database management, are critical skills. In response, the department has revised course content, introduced a writing course tailored to agribusiness, expanded internships, and explored interdisciplinary collaborations to enhance real-world applications. The findings highlight opportunities for further alignment, such as integrating emerging technologies and the expansion of modules on sales, marketing, finance, and management to better meet students' aspirations. By bridging these gaps, agribusiness programs can evolve to meet dynamic educational and professional demands, ensuring that graduates are well-equipped for modern challenges.

1 Introduction

Today's agribusiness curriculum studies have generally focused on discussing how to meet the challenge of unprecedented demographic shifts and lower birth rates (Getman 2024). Rising college costs, reduced public funding for higher education, and travel restrictions due to the COVID-19 pandemic are some of the factors that have led to a decline in enrollments both in the US and globally (Downs 2023). It is anticipated that the population of college-age students will decrease by 15 percent between 2025 and 2029 in the US, which will likely result in a further reduction in overall college enrollment (Grawe 2018).

Agribusiness academic programs have evolved dramatically in response to changes in international markets, technological advances, environmental concerns, and the growing complexity of the agribusiness system (Brown et al. 2024). With the industry's changing demands, agribusiness programs' curricula have been adjusted to include more innovative and creative teaching approaches to prepare students for positions in agribusiness (Tewari et al. 2024). However, the authors did not find any specific studies systematically examining the factors students consider when enrolling in agribusiness majors or on redesigning academic programs to meet students' expectations and industry needs.

This research examines the agribusiness program at a non-land-grant state university as a case study to illustrate the dynamics between students' and industry's expectations from an agribusiness

education. Further, we discuss program adjustments to sustain student enrollment while addressing stakeholder expectations. In this study, senior exit surveys from 2012 to 2023 are analyzed to understand students' expectations, and results from industry focus group discussions are used to interpret industry needs. Agribusiness program adjustments are summarized by examining the department's five-year program review reports and faculty commentary. Overall, this study aims to demonstrate how curriculum adjustments in this agribusiness program have aligned with changing student demographics, expectations, and industry needs.

The next section summarizes previous studies on changes and future program suggestions for agricultural economics and agribusiness education in the United States. The following part outlines the specifics of the case study agribusiness program, followed by sections detailing the data and methods. The results section presents the findings of the analysis, and the paper concludes with a discussion of these findings.

2 Background

There is a wide range of literature focusing on the evolution of curriculum and the future of agricultural economics and agribusiness programs. These studies are categorized into three main areas: (1) curricular effects (developing business skills and general education), (2) soft skill development (internships, leadership, and the relationship between educational activities and starting salaries), and (3) emerging trends (the importance of international experiences, case studies, and online teaching).

Program development of agribusiness curricula has long emphasized the importance of business skills. For instance, Miller (1959) noted the need to add agricultural marketing and farm supply management skills to curriculum design. Gunn (1959) further reported that management courses were added to 14 agricultural economics programs in 1959 to highlight the importance of management skills in agribusiness education. Sonka (1989) revealed two trends in agribusiness programs: (1) programs in liberal arts schools and are strictly economics focused and (2) programs in agricultural schools but that encompass management skills and agricultural economics. Fulton (1998) recognized the need for agribusiness students to learn about mergers, acquisitions, joint ventures, and strategic alliances. More recently, Boland and Daniel (1999) pointed out the importance of enhancing marketing research and price analysis skills among students in agricultural economics. Additionally, Wysocki et al. (2003) explored the challenges and opportunities of integrating marketing concepts into agribusiness education. Their study highlights the significance of international marketing perspectives and the use of applied learning methods in teaching simulation courses. Specifically, the authors argued that students should understand the global supply chain, international trade regulations, and export marketing strategies.

As agribusiness programs evolved, a question arose regarding the desirability of general education requirements and the availability of electives in an already broad-based agribusiness degree program (Connor 1989). Connor suggested that there should be space for a general education calculus course for an agricultural economics major, while potentially replacing it with a selling or postharvest physiology course for a food marketing major. Adrian (1990) revealed that general education requirements were consistent among agribusiness programs in the southern states regarding the number of courses in humanities/fine arts, mathematics and natural sciences, and social sciences. The study also identified unique general education requirements such as cultural heritage, computer science, and foreign language.

A soft skill emphasized by the industry is the usefulness of internships in an agribusiness curriculum. In 1991, the Farm Foundation, the US Department of Agriculture's Office of Higher Education, and Pioneer Hi-Bred International hosted a Higher Education in Transition Conference to strengthen the connection between academics and the industry (Farm Foundation 1991). Following the conference, Harrison and Kennedy (1996) suggested that agribusiness internships can be an effective method and

defined an internship as “experiential learning to be an integral part of agribusiness training,” where “the student, industry, and educational institution must each provide input into the design and implementation of the internship program.” Another study analyzed the number of departments offering internship courses and the enrollment of students in those courses (Adrian 1990). Using data from 15 agribusiness programs in the South, the study found that 75 percent of the departments provided an internship program, but less than 15 percent of students enrolled in the courses. More recently, Gillespie and Bampasidou (2018) examined how industry can help students accomplish their career goals. The study highlights employers’ input in improving academically rigorous curricula and emphasizes the importance of soft skills as well as connecting with the industry, which benefits students by enhancing their critical thinking and communication skills. Their results affirm findings from a study by Akridge (2016), who reported that internships help students develop workplace skills and foster a more global perspective as well as an appreciation for intercultural awareness.

Leadership and strategic decision-making are essential for agribusiness students as the industry continues to evolve, and organizations face shifting goals, relationships, resources, and cultures. Strong leadership skills enable individuals to make more effective decisions (Thompson et al. 2024). With advances in technology and growing global challenges, students would need more than academic knowledge, and they are expected to learn how to lead and adapt (Smalley et al. 2016). This challenge can be resolved with stronger leadership development and education focusing on leadership through teamwork, international experiences, hands-on training, research, and personal growth opportunities (Velez et al. 2014). By learning these skills, students will be better prepared to make strategic decisions, solve problems, and guide agribusiness into the future.

A few studies have attempted to systematically analyze the salary characteristics of graduates and to learn about career expectations within the industry. Broder and Deprey (1985) created a salary model to consider the impacts of the students’ educational performance and personal skills, along with their families’ investments in human capital. Using variables such as work experience, employment sector, geographical location, degree received, grade point average (GPA), high school size, cost of education, and student demographics, the authors show that work experience yields a significant increase, while working in the private sector adds an additional rise to a graduate’s annual salary. To further explore the salary differences between agribusiness and agricultural economics graduates, Barkley and Biere (2001) suggest that extracurricular activities resulting from student self-selection and work experience significantly increase salaries and that the results are similar for both agribusiness and agricultural economics majors.

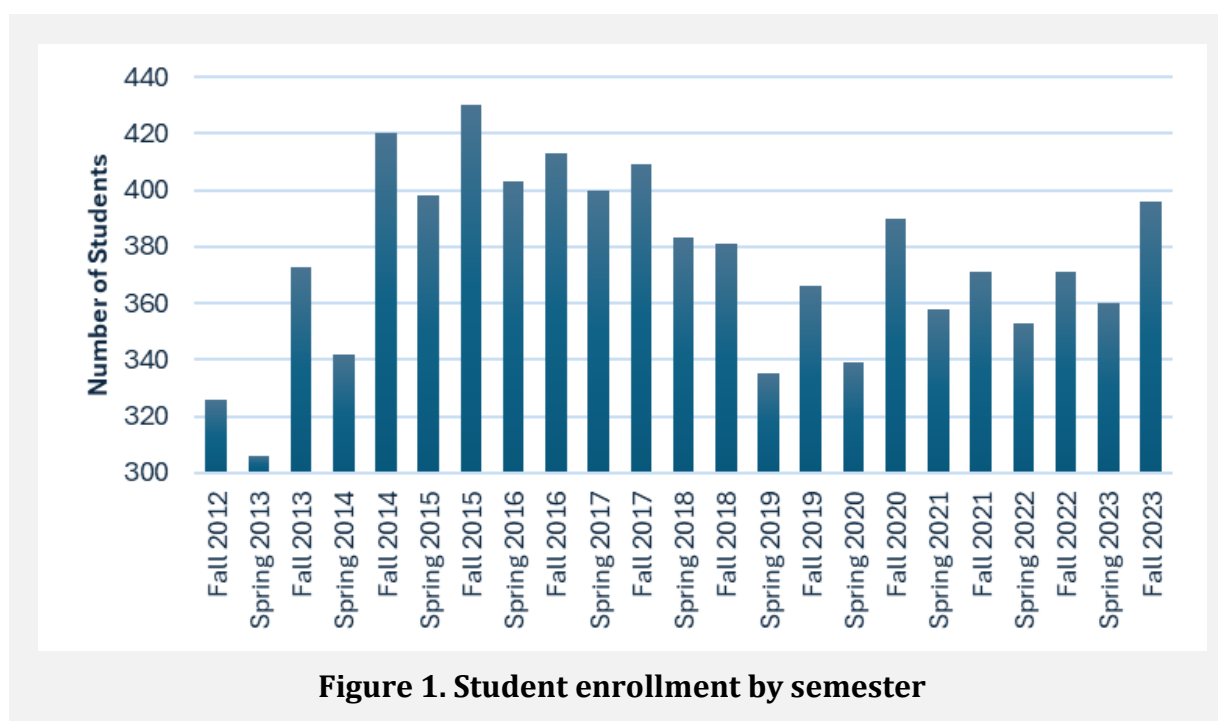
The case study teaching method has gained popularity, leading to the creation of capstone courses designed to practice managerial skills. Harling and Akridge (1998) developed four distinct types of cases: (1) technical problem-solving cases that utilize data and established procedures for data analysis; (2) short-structured cases that necessitate the application of concepts to enhance a situation, thereby helping students improve their marketing, finance, and operations management skills; (3) long-structured cases that concentrate on skills related to business policies and strategic management; and (4) ground-breaking cases that prepare students for analytical and experiential skills for workshop discussions. Case study methods are described as an effective means to promote productive discussions, such that “during the class, the educator’s objective is to guide and encourage discussion rather than simply convey knowledge, and the students are called on to contribute formally to the group’s understanding” (Harling and Akridge, 1998, p. 14).

To foster innovative international experiences and enhance international enrollments, many agribusiness programs have begun offering study abroad opportunities at partner universities or bringing students for international internships during semester breaks (Tewari et al. 2024). Studying abroad is believed to improve students’ cognitive and professional development skills (Tanikawa 2023). A new teaching model has also been developed that focuses on collaborative online international learning

(Tewari et al. 2024), wherein instructors from two or three universities in different countries design and deliver course content online. Students remain at their enrolled universities but connect with the instructor synchronously or asynchronously online and conduct course projects. This new teaching model avoids the high costs of international travel and provides an affordable way to facilitate international learning.

3 Department Background

The Department of Agricultural Business (the department) was established in 1970, and it is one of six departments in the College of Agriculture. Students graduate from the department with a Bachelor of Science degree in Agribusiness. The department also offers minor degrees to students in other majors, and, recently, has created a wine business major collaborating with the Department of Viticulture and Enology. With a mission to produce highly trained, principled agribusiness professionals, the department aims to lead in education, research, and leadership in food and agricultural systems. Over the past few years, the department has experienced remarkable growth, increasing its student enrollment from 200 in the early 2000s to over 400 in some semesters after 2014. In contrast to national issues to limit programs in response to declining enrollment trends or resource restrictions, the department has seen significant industry involvement, helping shape its curriculum during fluctuating enrollment since 2019 (Figure 1).



Several successful measures have been implemented to enhance the appeal of the agribusiness program compared to other programs within the university. First, faculty designed a comprehensive four-year plan guiding students through each semester's course sequencing. Second, faculty ensure that all required courses in the major are offered each semester. Third, mandatory advising before the next semester's course registration period was instituted for all students. These three measures have facilitated timely graduation and made the program one of the university's fastest in terms of time to graduation. Finally, strong emphasis is placed on internships, national collegiate agribusiness competitions, industry tours/speakers, and short-term study abroad courses to provide students with additional experiences that enhance their skill set.

4 Data and Methods

One way the department evaluates the program's success is through exit surveys conducted with graduating seniors. The senior exit survey is administered by the university's Office for Institutional Effectiveness at the end of each semester, and safeguards are in place to prevent students from participating in the survey more than once. Students are notified by a department email at the end of each semester asking them to complete the survey, with a reminder email sent one week later to those who have not participated. Additionally, as a part of student learning outcome assessment activities, the department periodically conducts focus group discussions (FGD) with industry stakeholders. This helps the department stay up to date with skills the industry deems necessary for new graduates to achieve career success and remain competitive in the job market. Thus, the department can revitalize and update the current curriculum and class offerings to better align the department's degree with changing industry needs. After faculty discussions of proposed curriculum changes, the changes are normally put into action after being discussed at bi-annual industry advisory board meetings.

This study reports the results of three analyses: (1) the mean values for the first four sections of the survey that utilize five-choice Likert scales, (2) a summary of the qualitative responses to the four open-ended questions, and (3) a summary of the qualitative responses from a focus group of stakeholders that comprise the department's industry advisory board.

The survey data used in this study consists of twelve semesters of responses starting in fall 2012 and ending in spring 2023; four semesters of data represent fall graduates and eight spring graduates. It should be noted that: (1) response rates vary greatly by semester over the time frame, (2) continuous data for every semester in the time frame is not present because some semesters had no student respondents, and (3) the survey was not completed by any students during the semesters of fall 2019 through spring 2021, most likely due to the COVID-19 pandemic. For the twelve semesters represented in the data, 304 students responded to most parts of the survey.

The format of the survey consists of five sections: (1) general instruction in the department (five-choice Likert scale); (2) preparedness in key knowledge areas necessary for career success (five-choice Likert scale); (3) the quality of advising in the department (five-choice Likert scale); (4) factors that may have brought them to the department for their degree (five-choice Likert scale); (5) questions about the department's strengths, weaknesses, changes to improve the quality of the department, and career aspirations (open ended).

The quantitative data was analyzed by determining mean values, based on the five-choice Likert scales, for the statements and factors that appear within each of the four categories described above. A pooled mean is used instead of normalized means since participation in the survey is voluntary and the response rates vary by semester not related to the senior numbers, and we want to avoid artificially increasing the influence of the years with low response semesters. An ANOVA analysis was conducted first to determine if a significant difference existed between the mean values of females (134 respondents), males (156 respondents), and undeclared (14 respondents). Based on Tukey's HSD test, there were two instances where the differences in means were significant at the 95 percent confidence level; (1) faculty assistance in finding an internship and (2) the importance of work experience in the student enrolling in the agribusiness major. In both instances, the mean values for males exceeded those of females. Due to the lack of a statistically significant difference between mean values for females and males, for the vast majority of the statements and factors considered, only the overall mean values are reported.

Analyses of students' qualitative comments and focus group discussion responses were accomplished by using Anthropic's Claude AI (<https://claude.ai/new>), a family of large language models that use machine learning to analyze documents. Since this type of artificial intelligence is trained on enormous amounts of text data, it helps summarize text and report the results in readily understandable

language. For the open-ended questions, Claude was instructed to (1) create common categories of responses, (2) record the percentage of responses falling into each category, and (3) summarize typical sub-themes of responses within each category. For situations where a response contained multiple themes, Claude categorized the comment based on the primary focus of the responses. Upon completion of Claude's summarizations, researchers spot-checked the qualitative data to be satisfied with the quality of the AI findings.

The latest FGD was held with the members of the Agricultural Business Advisory Board (ABAB) and a few invited industry associates in October 2024. ABAB is a department-controlled advisory board consisting of 12 members, many of whom graduated with an agribusiness degree from the department. A total of 13 industry partners (nine from the board and four invited associates), three department faculty/staff, and three students attended the FGD. The 13 industry partners represented various aspects of the agricultural community, from human resources to production to insurance to marketing. A double diamond design framework, a design structure developed by the UK Design Council (<https://www.designcouncil.org.uk/our-resources/the-double-diamond/>) to explore an issue more deeply and then take focused action, was used as the format for conducting the FGD. The double diamond process helps reconsider the program by gathering ideas from the FDG participants, consisting of four stages:

- (1) discover/research: participants were asked to write down as many ideas as they could think of on small Post-It notes in a 10-minute period
- (2) define/problem: the facilitator invited the participants to place their Post-It notes on the wall, where predetermined and open-ended categories were indicated to define the main subjects,
- (3) develop/ideation: the facilitator led a discussion of the items on the Post-It notes and helped develop ideas in a collective way on the discussed subjects
- (4) deliver/solution: the facilitator asked the participants to divide into four groups, assigned each group specific categories, and had them write down suggestions on these assigned categories.

The first question posed to the participants was, "What specific skills should agribusiness graduates possess to meet the needs of the industry effectively?" followed by "What do you recommend to the Department to ensure graduates are well-equipped to meet current and future industry needs?"

5 Results

The next subsections present the quantitative exit survey results, followed by the qualitative results, with the focus group results appearing in the final subsection. The overall results and the department's actions are discussed in the conclusion section.

5.1 Mean Analysis of Quantitative Data

Analysis of the survey data indicates a program with strong instructional quality, as reflected in high student satisfaction ratings for instructor helpfulness, variety of course offerings, and assignment quality (See Appendix Table A1 for details). However, course sequencing and prerequisites show lower satisfaction, suggesting that curriculum pathway restructuring should be explored. In addition, students expressed demand for expanded course offerings both within and outside their agribusiness major, indicating curriculum breadth limitations. The knowledge preparedness results in Table 1 demonstrate student perceived mastery of foundational business competencies in economics, finance, and communication skills but reveal student concern in specialized agricultural knowledge areas, particularly agricultural law and policy. This imbalance between agribusiness fundamentals and more narrowly focused agricultural specialization courses should be addressed to ensure students enter the workforce with the requisite skill set.

Table 1. Mean values for level of preparedness in key knowledge areas

| Knowledge Area | Count | Mean | Std. Dev. |
|-----------------------------------|-------|------|-----------|
| Basic economic knowledge | 304 | 4.29 | 0.69 |
| Financial concepts | 303 | 4.19 | 0.83 |
| Oral communication skills | 304 | 4.19 | 0.81 |
| Computer applications preparation | 304 | 4.15 | 0.79 |
| Written communication skills | 303 | 4.13 | 0.81 |
| Management concepts | 304 | 4.11 | 0.78 |
| Basic agricultural knowledge | 304 | 4.09 | 0.87 |
| Marketing concepts | 304 | 4.09 | 0.84 |
| Quantitative skills | 303 | 4.01 | 0.81 |
| Agricultural policy | 304 | 3.81 | 0.96 |
| Agricultural law | 303 | 3.59 | 1.04 |

Notes: Likert scale (1 = not well prepared, 2 = slightly prepared, 3 = prepared, 4 = well prepared, 5 = very well prepared)

Table 2. Mean values for importance of factors in enrolling in the department

| Survey Statement | Count | Mean | Std. Dev. |
|---|-------|------|-----------|
| Agribusiness major | 301 | 4.31 | 1.00 |
| Reputation of the agriculture college | 294 | 4.07 | 1.13 |
| Reputation of the university | 292 | 3.68 | 1.23 |
| Personal qualities match career sought | 290 | 3.57 | 1.31 |
| Personal contact from someone at college/university | 289 | 2.99 | 1.45 |
| Work experience matched degree sought | 289 | 2.92 | 1.46 |
| Availability of extracurricular club activities | 290 | 2.57 | 1.44 |
| Faculty contact from someone in department/college | 290 | 2.49 | 1.35 |
| High school (ag.) teacher recommendation | 290 | 2.36 | 1.52 |
| Availability of academic competitions | 288 | 2.27 | 1.28 |
| Availability of internship opportunities | 290 | 2.22 | 1.28 |
| Placement center success rate | 289 | 2.18 | 1.26 |

Notes: Likert scale (1 = not important, 2 = slightly important, 3 = important, 4 = more important, 5 = very important).

Academic advising receives favorable ratings across most metric statements (see Appendix Table A2 for details), yet internship assistance registers comparatively lower. The lower rating aligns with students' broader career preparation concerns expressed in the survey and suggests a more structured internship placement program, along with training advisors and faculty in industry connections, could alleviate this concern. When selecting this program, Table 2 reveals students prioritize the agribusiness major itself and the institution's reputation over practical career support elements like internship opportunities and placement success rates. This disconnect suggests that while the program attracts students through its academic reputation, there is a need to increase experiential learning and professional development resources to facilitate students' transition into the workforce.

5.2 Qualitative Comments Summaries

The open-ended questions appearing in all versions of the exit survey during the time frame analyzed focused on students' input regarding (1) perceived strengths of the department, (2) perceived weaknesses of the department, (3) changes to improve the quality of the department, and (4) their agricultural career aspirations. (See Appendix Tables A3–A5 for details.)

The distribution of responses suggests faculty excellence/accessibility is a foundation of the department, with typical comments revolving around faculty helpfulness, caring about student success, being easy to communicate with, and their availability for office hours. This category is complemented by strong program structure/resources and industry connections and career support, which provides insight into the areas students place a high value on, determining the strengths of this program. Four of the six categories of responses also speak to the importance of the human element in creating a comprehensive educational experience. Additionally, student feedback identifies course availability and scheduling as the primary weakness in the program, while faculty quality paradoxically appears as both the greatest strength and a significant weakness, likely reflecting variability in instructional delivery and pedagogical approach across faculty members (Table 3). Furthermore, the improvement suggestions in Table 4 emphasize modifications to course delivery and structural organization rather than content additions, indicating that pedagogical refinements may yield the greatest impact for students. To address these concerns, faculty could focus on expanding course scheduling flexibility, promote instructional consistency through professional development and peer-mentoring initiatives, and strengthening industry engagement to bridge the gap between academic preparation and career readiness. The program's solid foundation in core business skills provides a platform for enhancements in agricultural specialization and experiential learning opportunities that would better serve students' diverse career aspirations.

The career aspirations data in Table 5 show that 31.7 percent of students targeting sales/marketing positions in agribusiness, which highlights the necessity of a curriculum that supports these career pathways. More than half of the career paths are business-focused positions, and a low percentage represent hands-on positions in production/farm management. Factors such as the emergence of innovative technologies and their potential impact on careers in the agricultural sector, student interest in combining office and field work in a career, and their openness to careers beyond traditional agribusiness roles, are possible explanations for the high percentage of students indicating "Other." Continuation of these trends suggests exploration of customizable curriculum paths may be in order. Additionally, a couple of key patterns that emerged in the responses include students' desire to combine multiple areas such as sales and marketing or finance and management and the desire for career progression, such as starting in sales and moving to marketing.

Based on the results in this study, there are several opportunities for curriculum modification. First, strengthen practical experiences because both students (noted as a weakness) and industry would likely support enhanced hands-on learning opportunities. Second, enhance students' ability to develop

Table 3. Greatest strengths and weaknesses of the department (N = 271)

| Strengths | Percentage | Weaknesses | Percentage |
|--------------------------------------|-------------------|--|-------------------|
| Faculty Quality & Accessibility | 42.1 | Course Availability & Scheduling | 27.9 |
| Program Structure & Resources | 18.1 | Teaching & Communication Issues | 24.0 |
| Industry Connection & Career Support | 15.1 | Curriculum Structure & Content | 21.0 |
| Academic Support & Advising | 11.1 | Practical Experience & Industry Connection | 14.9 |
| Learning Environment & Community | 8.1 | Facilities & Resources | 6.9 |
| Specific Course Strengths | 5.5 | Academic Support & Advising | 5.3 |

Table 4. Suggestions to improve the quality of the department (N = 262)

| Suggestion | Percentage | Suggestion | Percentage |
|-----------------------------|-------------------|------------------------|-------------------|
| Course Delivery & Structure | 16.3 | Industry Connection | 6.3 |
| Faculty & Teaching Quality | 12.7 | Student Support | 5.9 |
| No Changes/Satisfied | 11.8 | Facilities & Resources | 3.6 |
| Course Availability | 9.5 | Student Engagement | 2.3 |
| Hands-On Learning | 8.6 | Other/Miscellaneous | 23.1 |

Table 5. Agribusiness career aspiration (N = 271)

| Career Areas | Percentage | Career Areas | Percentage |
|-----------------------|-------------------|------------------------|-------------------|
| Sales/Marketing | 31.7 | Production Agriculture | 7.0 |
| Other | 19.2 | Undecided/Open | 5.9 |
| Finance/Banking | 12.5 | Technical/Specialist | 3.0 |
| Farm/Ranch Management | 8.5 | Business Ownership | 2.6 |
| General Management | 7.0 | Government/Policy | 2.6 |

industry-relevant skills by reviewing and modifying course availability (a weakness cited by students). Finally, leverage students' feeling of being well prepared in oral and written communication to enhance the learning experience in courses throughout the major. This, according to the focus group results, aligns with industry priorities. Faculty can create programs that are both pedagogically sound and industry-relevant by systematically integrating feedback from both sources and tracking its effectiveness.

5.3 Focus Group Discussion Analysis

The FGD participants' responses to the question regarding specific skills of agribusiness graduates were categorized into the following agreed-upon groups: (1) basic skills, (2) soft skills, (3) advanced skills, (4) policy knowledge, and (5) others. A total of 153 skills were recorded, with participants writing their

responses on small Post-It notes and placing them under the corresponding category. Among the categories, basic skills received the highest number of responses, followed by soft skills, advanced skills, and policy knowledge, respectively.

Analysis of the responses across each skill category shows several significant patterns in desired professional competencies (Table 6). Industry-specific knowledge and operations emerged as the highest-priority category highlighting the importance of specialized expertise in areas such as food safety, quality control, and supply chain management. Technical and computer skills followed by communication and literacy demonstrate the near-equal importance of digital competency and effective communication in workplaces. Teamwork and collaboration skills reflect the increasing emphasis on collaborative work environments. Finally, critical thinking and problem-solving capabilities suggest the necessity of fundamental professional requirements along with specialized skills. The participant responses also show an interesting evolution from purely technical skills toward a more balanced combination of hard and soft skills, with particular emphasis on adaptability, professional conduct, and emotional intelligence. Leadership capabilities, while not top-ranked in percentage terms, appeared consistently across all categories, often integrated with other skill sets such as communication and team management. The findings suggest that modern professional requirements increasingly favor well-rounded individuals who combine technical expertise with strong interpersonal and analytical capabilities.

Table 6. Top responses across all skill categories

| Top Response Categories | Percentage | Key Subthemes |
|---------------------------------------|-------------------|--|
| Industry knowledge and operations | 39.5 | Macro-industry understanding Food safety Quality control Import/export Logistics Supply chain |
| Technical and computer skills | 34.8 | MS Office Suite Excel Database management Online platforms AI awareness |
| Communication and literacy | 34.6 | Written/verbal communication Presentations Grammar Spelling Professional writing |
| Teamwork and collaboration | 30.2 | Team building Interpersonal skills Team management Collaboration abilities |
| Critical thinking and problem solving | 24.9 | Analytical skills Problem-solving capabilities Intellectual curiosity |

One notable insight from the focus group was the emphasis on digital skills, including AI and database management. This emerging trend was not reflected in student feedback at this time, likely because recent advancements in AI and technology were captured in the focus group but not in survey data spanning earlier years. This finding highlights an opportunity for the department to adapt its curriculum further, ensuring students are equipped with cutting-edge technological competencies critical for modern agribusiness careers.

Analyzing the responses of participants to the second question, which includes their recommendations, reveals a strategic emphasis on bridging the gap between academic education and industry requirements (Table 7). The highest priority is given to industry integration and exposure, suggesting a critical need to connect classroom learning with real-world applications through industry leader involvement, site visits, and practical experiences. Academic rigor and assessment emphasize the importance of maintaining high educational standards through critical grading and comprehensive subject matter coverage. Other recommendations include professional skills development, management and HR training, and specialized knowledge areas, highlighting the importance of practical industry connection while maintaining academic excellence and essential skill development. All categories include recommendations for hands-on learning and industry involvement, suggesting a consistent theme of practical application across the curriculum. This comprehensive approach appears designed to produce well-rounded professionals who are both academically qualified and workplace ready.

Table 7. Top recommendation categories on bridging the gap between academic education and industry requirements

| Recommendations Category | Percentage | Key Implementation Strategies |
|-----------------------------------|------------|---|
| Industry integration and exposure | 28.6 | Industry leader involvement Farm visits Trade shows Real-world applications Expert speakers Alumni interaction |
| Academic rigor and assessment | 23.8 | Critical grading of written/verbal work Enhanced assignments Agricultural accounting integration Practical exercises |
| Professional skills development | 19.0 | Mandatory seminars Job etiquette training Interpersonal skills development Teamwork training Time management |
| Management and HR training | 16.7 | Management training Hiring/firing procedures Employee evaluation HR manual review Disciplinary actions |
| Specialized knowledge areas | 11.9 | Foreign language study Legal comprehension Import/export procedures Logistics Policy understanding |

6 Conclusion

Agribusiness and agricultural economics education has undergone significant evolution in response to changing student expectations and industry needs over the past decades. This study, utilizing senior exit surveys and a focus group discussion with industry stakeholders, identifies key similarities, gaps, and departmental responses to these dynamics. While this study incorporates both student and industry feedback, there are key differences between the feedback sources. Students measure satisfaction from their educational experience and because they have limited exposure to industry requirements, they may not be able to determine which of the skills will be the most valuable in their careers. Industry, by contrast, measures the effectiveness of education based on students' ability to perform in a professional environment, which may not match what students perceive to be important during their education. While industry has insights regarding emerging trends, technological shifts, and evolving skill requirements, they may not fully understand the broader educational mission of universities or the constraints they face. Therefore, an important consideration for faculty is which feedback to prioritize.

Because students have direct experience with the pedagogical differences between courses, course sequencing, scheduling challenges, etc., they can provide insights about instruction, the effectiveness of teaching methods, and access to learning resources. Their feedback impacts retention rates and program enrollment. On the other hand, industry stakeholders can identify skill deficiencies that students may not recognize. For example, students may feel well-prepared in economic knowledge, but industry may identify specific applications that require emphasis in the classroom. Industry can also provide insights into practices or evolving technologies that should be incorporated into curricula before they become mainstream. Their feedback impacts employability and is especially valuable for the career paths that most students aspire. Thus, feedback should be weighed differently depending on the area of focus. First, for core competencies, there should be a balance between both perspectives due to the different insights each brings. Second, technical skills should rely heavily on industry input because staying current allows them to remain competitive, improve efficiency, adapt to changing technology, etc. Finally, the learning experience should prioritize student input due to their direct engagement with the educational experience. The investigators of this study recommend a curriculum strategy comprised of three parts: (1) map student feedback to short-term modifications in program structure and teaching pedagogy, (2) map industry feedback to long-term competency development and learning outcomes, and (3) create transparency about how input from all stakeholders shape curriculum decisions.

The findings reveal strong alignment between students' demand for hands-on learning and the industry's emphasis on applied knowledge and real-world experience. The department has responded by revising existing courses to integrate practical applications while managing faculty workload. This approach aligns well with the priorities of both groups and demonstrates a commitment to preparing students for industry challenges through exposure to domestic professionals and international study abroad programs. Additionally, students expressed concerns about their preparedness in agricultural policy and law, which aligns with industry calls for specialized knowledge in these areas. Introducing targeted course modules or encouraging participation in relevant workshops and conferences are options to help address this concern effectively.

While there is general alignment, notable differences between student preferences and industry demands were observed. For example, students rated internships relatively low in importance when enrolling in the program, whereas the industry underscored their critical value. This disconnect suggests the need for enhanced coordination and communication about the importance of internships. The department has proactively expanded internship opportunities and increased collaboration with other agricultural departments, addressing feedback from both groups. Similarly, while students prioritized teaching consistency and course scheduling, the industry emphasized professional communication

standards. The department's introduction of a tailored agribusiness writing course demonstrates a strategic response to these concerns, fostering skills vital for workplace success.

This study is an example of how an agribusiness program has been modified to become more attractive for students and industry alike. It may serve as an example for other agribusiness programs to ensure its graduates remain competitive in a rapidly changing industry environment. There is a role for industry stakeholders to play in shaping curricular outcomes, but it is important to maintain transparency and academic independence in such partnerships. Whether curriculum modifications based on industry input are necessitated by emerging trends, policy shifts, funding fluctuations, or a combination thereof, adaptive strategies should be in place to maintain program integrity amid shifting priorities. Maintaining an open dialogue among students, faculty, and industry stakeholders will be essential in ensuring that an agribusiness program continues to evolve and meet the demands of a dynamic agribusiness landscape.

Appendix

Table A1. Mean values for statements regarding general instruction from senior exit surveys

| Survey Statement | Count | Mean | Std. Dev. |
|---|-------|------|-----------|
| Instructors were helpful | 303 | 4.18 | 0.80 |
| Variety of courses was satisfactory | 303 | 4.13 | 0.81 |
| Assignment requirements helpful in facilitating understanding | 303 | 4.04 | 0.80 |
| Work required in courses was challenging | 302 | 4.00 | 0.83 |
| Course prerequisites made sense | 301 | 3.96 | 0.98 |
| Sequencing of coursework worked well | 301 | 3.88 | 0.89 |
| Opportunity to take more courses in major would be helpful | 303 | 3.83 | 1.06 |
| Opportunity to take more courses outside major would be helpful | 303 | 3.52 | 1.16 |

Notes: Likert scale (1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree).

Table A2. Mean values for quality of advising from senior exit surveys

| Survey Statement | Count | Mean | Std. Dev. |
|--|-------|------|-----------|
| Advisor knowledgeable about degree requirements | 299 | 4.36 | 0.90 |
| Advisor knowledgeable about university rules/regulations | 299 | 4.36 | 0.87 |
| Advisor available at scheduled appointment times | 299 | 4.32 | 0.94 |
| Answers to questions were understandable | 298 | 4.30 | 0.97 |
| Advisor knowledgeable about advising procedures | 299 | 4.28 | 0.92 |
| Given prompt assistance | 298 | 4.27 | 1.00 |
| Information provided was presented clearly | 299 | 4.25 | 0.99 |
| Faculty assisted in finding internship | 299 | 3.73 | 1.28 |

Notes: Likert scale (1=strongly disagree, 2=disagree, 3=neither, 4=agree, 5=strongly agree).

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Table A3. Typical subthemes for the greatest strengths and weaknesses of the department

| Strengths | Weaknesses |
|---|---|
| <p>Faculty Quality & Accessibility</p> <ul style="list-style-type: none"> • Helpful, knowledgeable • Available • Care about student success • Good teaching quality • Easy to communicate with | <p>Course Availability & Scheduling</p> <ul style="list-style-type: none"> • Limited class sections • Scheduling conflicts • Timing of course offerings • Impacted classes • Graduation delays due to availability |
| <p>Program Structure & Resources</p> <ul style="list-style-type: none"> • Class availability • Curriculum organization • Prerequisites structure • Course variety • Educational resources | <p>Teaching & Communication Issues</p> <ul style="list-style-type: none"> • Language barriers • Inconsistent teaching quality • Difficulty understanding some professors • Varying expectations between instructors • Communication issues |
| <p>Industry Connection & Career Support</p> <ul style="list-style-type: none"> • Job opportunities • Internship connections • Industry networking • Location in ag. region • Real-world applications | <p>Curriculum Structure & Content</p> <ul style="list-style-type: none"> • Repetitive content across courses • Need more specialized courses • Prerequisite/advanced courses gap • Course difficulty variations • Theory/application balance |
| <p>Academic Support & Advising</p> <ul style="list-style-type: none"> • Academic counseling • Department organization • Registration support • Graduation planning • Student guidance | <p>Practical Experience & Industry Connection</p> <ul style="list-style-type: none"> • Limited hands-on experience • Lack of field work • More real-world applications • Limited use of farm facilities • More industry exposure |
| <p>Learning Environment & Community</p> <ul style="list-style-type: none"> • Small class sizes • Personal attention • Student relationships • Department atmosphere • Collaborative environment | <p>Facilities & Resources</p> <ul style="list-style-type: none"> • Need updated classrooms • Limited computer labs • Building conditions • Study space limitations • Technical resources |
| <p>Specific Course Strengths</p> <ul style="list-style-type: none"> • Finance course • Economics courses • Specific professors • Computer applications • Hands-on learning | <p>Academic Support & Advising</p> <ul style="list-style-type: none"> • Consistency • Career path guidance • Course selection support • Academic support services • Registration assistance |

Table A4. Typical subthemes for suggestions to improve department quality

| Suggestion/Common Theme | Suggestion/Common Theme |
|--|---|
| Course Delivery & Structure <ul style="list-style-type: none"> • Organization & content • Curriculum modifications • Program pathways • Sequencing suggestions • Course requirements & prerequisites | Industry Connection <ul style="list-style-type: none"> • Professional networking • Guest speakers • Industry exposure • Career preparation • Internship opportunities |
| Faculty & Teaching Quality <ul style="list-style-type: none"> • Teaching consistency • Instructor expertise • Teaching methods • Grading standards • Faculty availability | Student Support <ul style="list-style-type: none"> • Academic assistance • Tutoring services • Supplemental instruction • Study resources • Learning support |
| No Changes/Satisfied <ul style="list-style-type: none"> • Satisfied • No suggestions • Positive feedback • Current system works well | Facilities & Resources <ul style="list-style-type: none"> • Physical infrastructure • Classroom conditions • Learning spaces • Building improvements • Educational resources |
| Course Availability <ul style="list-style-type: none"> • Scheduling • Section availability • Course offerings • Time slot options • Access to required courses | Student Engagement <ul style="list-style-type: none"> • Club participation • Student activities • Community building • Department events • Student involvement |
| Hands-on Learning <ul style="list-style-type: none"> • Practical applications • Field experience • Applied learning • Real-world practice • Workshop-style learning | Other/Miscellaneous <ul style="list-style-type: none"> • Specific course comments • Personal preferences • Mixed feedback • Unique recommendations • Various individual suggestions |

Table A5. Typical careers mentioned within major agribusiness career areas

| Career Areas | Career Areas |
|---|--|
| <p>Sales/Marketing</p> <ul style="list-style-type: none"> • Sales representative • Marketing specialist • Broker • Export/trade position • Wine marketing | <p>Production Agriculture</p> <ul style="list-style-type: none"> • Farmer • Dairy operations • Livestock production • Crop production • Direct ag. production |
| <p>Other</p> <ul style="list-style-type: none"> • Various unique positions • Combined role • Specialized industry position • Miscellaneous career goals | <p>Undecided/Open</p> <ul style="list-style-type: none"> • Not sure yet • Open to options • Still deciding • Any ag-related position |
| <p>Finance/Banking</p> <ul style="list-style-type: none"> • Agricultural lending • Financial analyst • Appraiser • Accountant • Credit analyst | <p>Technical/Specialist</p> <ul style="list-style-type: none"> • Pest control advisor (PCA) • Agronomist • Quality control specialist • Food safety professional |
| <p>Farm/Ranch Management</p> <ul style="list-style-type: none"> • Farm manager • Ranch supervisor • Production manager • Field supervisor • Grower relations | <p>Business Ownership</p> <ul style="list-style-type: none"> • Starting own business • Self-employed • Entrepreneurship |
| <p>General Management</p> <ul style="list-style-type: none"> • General management • Operations manager • Supervisory role | <p>Government/Policy</p> <ul style="list-style-type: none"> • USDA position • FDA role • Agricultural policy • Government inspector |

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