



International Food and Agribusiness Management Review
Volume 11, Issue 1, 2008

Industry-Academic Partnerships – Benefit or Burden?

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Abstract

In an applied discipline such as agribusiness management, there are many opportunities for collaboration between academia and industry. This article highlights opportunities for industry-academic partnerships through research, sabbatical leaves, consulting, outreach, student enrichment activities, and industry advisory boards. The principal benefits and pitfalls associated with each type of collaboration are discussed along with tips for managing industry-academic partnerships.

Keywords: industry partnerships, industry collaboration

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Introduction

Historically, the field of agribusiness is rich with cooperation between agribusiness firms and universities. Universities offer well-educated graduates, new research and ideas, and highly specialized faculty members. Agribusiness firms offer employment opportunities, data for research projects, and industry expertise. Despite the natural opportunities for collaboration, there are many pressures at work to limit cooperation between the two groups. Industry managers face intense pressure to safeguard company secrets and to focus their efforts on tasks that increase company profits. Likewise, rewards for academics tend to be for specific outcomes, such as publishing research, teaching, or service or outreach activities. The result is that universities and agribusinesses may miss mutually beneficial opportunities to work together.

The objective of this paper is to present an in-depth discussion of opportunities for industry-academic partnerships. We focus on those opportunities with the greatest potential benefit for both organizations. The discussion centers on the primary benefits and pitfalls associated with each type of cooperation. This paper will be of greatest interest to academics in the early stages of their careers who are interested in exploring collaboration with industry partners. Experienced academics and administrators who may wish to develop a particular type of industry partnership may also find our experiences and insights useful.

The opportunities presented in this paper and the ensuing discussion of the benefits and burdens of developing partnerships between universities and industry are the product of our combined years of experience. The four authors of this paper have worked in many environments, including as faculty members and administrators in private and public universities, industry, and as consultants. As faculty members we have been engaged in research, instruction, service and outreach activities. We draw on our experience with both the successes and challenges of the many types of partnerships to present a robust discussion of the opportunities for industry-academic partnerships, what to expect from them, how to get the most from them, and the pitfalls that may occur.

Research Projects

In this section we address the various ways that universities and industry may collaborate on research projects. We distinguish between faculty and student-centered research. We further distinguish between student research that is primarily long-term, such as research leading to a thesis, and student research that is short-term, such as a class project. The key dimensions of the various types of industry-academic partnerships are summarized in Table 1 (*see Appendix*).

Joint and Industry Sponsored Research Projects

There are various forms that joint and industry-sponsored research may take. In this section of the paper, we highlight the Center for Food Distribution and Retailing (CFDR) at the University of Florida as an example of joint and industry sponsored-research. The CFDR facilitates research and education on the food distribution chain from growers to consumers, disseminates science-based information on the impact of the entire distribution chain on the final quality and safety of the food products on the shelves of food retailers' stores, and provides support to the food industry in the State of Florida as well as at national and international levels. Information on the CFDR may be found at <http://cfd.r.ifas.ufl.edu/>.

The CFDR is built upon a multi-disciplinary approach to research, in true partnership with industry. Currently, there are 28 faculty members across seven departments and two Research and Education Centers (Agricultural and Biological Engineering/Packaging Science, Animal Sciences, Family Youth and Community Sciences, Food and Resource Economics, Food Science and Human Nutrition, Horticultural Sciences, Plant Pathology, Indian River Research and Education Center, and the Tropical Research and Education Center) that collaborate on projects ranging from temperature control in the cold chain to the implementation and economics of radio frequency identification tags in retail grocery stores.

The stated objectives of the CFDR are to: 1) facilitate research and education in the multidisciplinary area of the food distribution chain from growers to consumers; 2) disseminate science-based information about the impact of the whole distribution chain on the final quality of the food products (temperature sensitive products) on the shelves of a retail store; 3) increase the scope of existing undergraduate and graduate programs at University of Florida by increasing the content in food distribution and retailing; and 4) provide support to the food industry at national and international levels.

The CFDR allows faculty members access to industry issues, expertise, and data. For example, a recent project involved studying the use of radio frequency identification tags on fresh produce from California and Central America to a grocery chain in central Florida. Representatives from grower/shippers, the retailer, technology providers, and faculty members collaborated on this research. The result of this project was a web-based interface that suppliers and retailers could use to track temperatures of fresh produce in transit in real time.

The CFDR relies heavily on industry funding to carry out industry-driven research. This funding can be in the form of "in-kind" contributions such as retail-store refrigerated cases or in the form of money to support graduate students, research

design, or data collection. The CFDR has received over \$2.2 million in industry funding in the last two years.

Joint and industry-sponsored research benefits both the university and industry. Faculty members receive funding for research (e.g. for graduate students, equipment, travel, etc.) and access to information. This enables faculty members to work on the cutting edge of issues facing industry. Industry benefits by gaining access to the knowledge base available from a major land grant university. Given the complex nature of issues facing industry, the multi-disciplinary approach of the CFDR is a critical component of the center's ability to deliver usable products in a timely fashion to industry. Industry also benefits from the fresh perspective that university researchers provide.

A potential downside to joint and industry-sponsored research is that industry may be concerned about protecting proprietary information. There are also concerns about the difficulties of remaining unbiased in a research project that is sponsored by industry. The center and its industry-based advisory board have been careful to insist on sharing research results with the entire industry in a timely manner. An additional downside to joint and industry-sponsored research is that work on industry projects may not lead to published journal articles. However, this problem is often overcome with a little creativity.¹

Long-term, Student-Centered Projects with Industry

There are a broad range of opportunities for industry-university research that is led by students. Projects range from long-term, in-depth, higher cost projects with high exposure and benefits for both students and industry, to short-term, simple projects that focus on exposing students to industry. In this section we focus on long-term, student-centered research projects.

The most in-depth experiences for both industry and student researchers are long-term research projects, traditionally conducted by graduate students, focusing on an industry-identified project. In this case, the company partner often pays the university for the costs of research, including a stipend for the graduate (or undergraduate) student. In return, the student focuses his or her research (e.g. a thesis) on a problem identified jointly by the company and the student's faculty mentors. In addition to thesis projects, other examples of long-term research projects include independent study and undergraduate research projects. The focus on undergraduate research is an emerging trend at many top U.S. universities.

¹ For more information on industry sponsored research, see the article entitled "How Agricultural Economists Increase the Value of Agribusiness Research" (Knight, House, and Wysocki).

The company benefits from in-depth exposure with a potential future employee, as well as having a problem examined by a fresh set of eyes and the prospect of utilizing applications and analyzed with the latest methods. For the amount of time and effort the student invests in a research project, particularly if it is a thesis or dissertation, the company will receive a more in-depth analysis than if they had worked with a consultant, usually for less expense. Not only do they get the expertise of the student, but usually the expertise of at least one, if not more, faculty advisors as well.

However, there are drawbacks for the industry partner. Though they may not be paying as much as they would for a consultant, this approach to research is not without cost. The cost of hiring a student, sometimes including tuition and indirect cost, is not trivial. Moreover, the largest cost may come in time. A consultant hired to work on a project will have a set, and usually relatively fast, timeline. However, students typically work at a much slower pace, conducting their research and studies over a period of a year (or more). Hence, the type of project that the industry partner would need to choose for this experience would be more of a long-term planning project, and less likely to be a pressing operational problem. There also is a risk in the quality and variability of the output from student research. However, faculty members typically oversee and contribute to student research, which tends to minimize the downside risk. Finally, consultants often have industry-specific knowledge and expertise that can be drawn on when tackling industry-specific issues.

The student benefits from the partnership by gaining exposure to a potential employer, having the opportunity to determine if the employer would be a good fit, access to data and information for a research project, and “real-world” experience that would enhance a resume. Through this process, the student may also gain from access to expertise that exists in the industry. Additionally, the faculty members working with the student often benefit from this exposure to industry problems.

Potential drawbacks for the student include working with a non-traditional thesis project, the potential difficulty in gathering all of the information needed to complete the analysis, and possible conflicts with publishing proprietary data. This also holds true for the faculty supervisor, who may find working with industry more time consuming than traditional research projects and who may find that the research may not be published. However, the faculty member gains from the exposure to the industry and access to data, issues, and expertise.

An example of the type of collaboration discussed above is a thesis created by Paul Jaramillo at the University of Florida (Jarmillo, 2004). For his thesis research, Paul worked with a private company on developing a strategic plan. During this process, both the student and company experienced many of the above-mentioned benefits and drawbacks. From the student’s perspective, the project was of interest because

of the exposure to a company, its employees, and the current nature of the issue. However, the student was frustrated by the difficulty in defining a research project that was both satisfactory for his thesis requirements and of value to the industry partner. The company partner paid the cost of one year of the student's assistantship and, in return, received an in-depth analysis on strategic planning in the company. The original request from the company was to examine market expansion opportunities, but during the process of defining the research project, it was jointly decided that internal issues (i.e., succession of company leadership) in the company were more pressing. This change in topic added to the initial frustration for the student, but through a series of focus groups conducted within the firm, the student was able to learn from the experience of identifying internal issues within the firm that were impacting market growth. The company has identified the benefits of the partnership as receiving the strategic planning document created as part of the research and having an increased exposure to students. One result of the project was a case study on the company that is now used in classrooms, giving an even greater exposure of the company to potential future employees and customers. The company also identified drawbacks as the length of time needed to complete the project and the cost of supporting the student. It should be noted that this company was willing to fund this graduate student's research based on the successful results of a previously completed graduate term project

Short-term, Student-Centered Projects with Industry

There are many opportunities for short-term student projects with industry involvement. These include individual or group class projects, company visits, and management interviews. Class projects, often group projects, are probably the most common means of exposing students to industry. In this case, a group of students works with an industry partner on a specific project, which may be defined by the instructor, students, company liaison, or some combination of the three. Class projects are usually considerably less involved than a graduate research project, but are completed on a shorter time horizon, thus making it more appropriate for certain decisions within a firm.

Many of the benefits discussed in the previous section accrue to the company and students, albeit on a smaller scale. Industry members are exposed to a fresh set of ideas (now coming from more than one student) and the latest information being taught in the classroom. The cost to the company for this alternative is lower than with a sponsored research project. Firms may commit to cover only expenses the students incur in completing the project (including travel to and from the company) if they cover any expenses at all. An additional benefit to the company is exposure to multiple students and in some cases the industry partner may get to meet the entire class, not just those students involved in the project. Drawbacks for the

company include variability in quality (arguably greater for a class project than a research thesis) and the commitment of time to work with students.

Students gain from exposure to a company and potential employer, as well as access to current issues, data, and expertise. Drawbacks for students on an industry class project include lack of ability to have access to all needed data and possible conflicting desires between a class professor and a company. The faculty member teaching the class must consider the cost of coordinating multiple class projects. However, there are many benefits from assigning industry projects including access to issues and information and the exposure to multiple companies for potential future collaboration.

The following examples illustrate how an industry class project might work. The first is an example from Mississippi State University, where students in the capstone class for the Master of Agribusiness often work with companies for their term projects. In one particular class, a group of students worked with a firm called Bainbridge Festive Foods. In this project, the students benefited from having exposure to the issues and data (or lack thereof) faced by a business recently purchased by new owners. Students experienced the problems generated when quality issues from a previous owner impact the new owners, and the importance of full disclosure at the time of purchasing a small business. The new business owners enjoyed the expertise of the students and faculty members in solving problems for their newly acquired business. In this case, the faculty members involved also benefited through the publication of a case study on the company and the possibility of future collaboration with the new owners. In this case, few drawbacks were identified. The students, although they did not consider employment with the company, did benefit from exposure to a company they would not have known about otherwise. Indeed the company became a client of one of the students involved in the project. On the downside, students did express frustration with the lack of financial data available to solve the problems. However, this problem but was due to lack of availability, not lack of access, and served as a useful learning experience for the students.

Another example of successful collaboration with industry on short-term projects is drawn from the Santa Clara University's agribusiness MBA program (<http://www.scu.edu/business/fai/>). In the capstone strategy class student groups were required to select a client-firm for their term project. The firm had to agree in advance to give students access to the required data, to allow the students to interview company employees, and to have at least one executive attend the final presentation. The pressure of having to develop a report and presentation to be delivered to senior management of the company served as a great motivator for students. From the companies' perspective, the ability of students to think "out of the box" was often mentioned as the single greatest benefit.

The two examples of class projects described above both focused on capstone classes. Other examples of classes that lend themselves particularly well to class projects include marketing, operations, and sales classes. In addition to class projects, company visits may be included as a component in most classes to allow students to learn about an industry or to illustrate the application of a specific technique. Management interviews also provide exposure to industry at a very low cost, both in terms of time and money and may be included as a component of many agribusiness classes.

Sabbatical Leaves with Industry

In a 1999 study, the American Association of State Colleges and Universities (1999) conducted a comprehensive study on building faculty for the future. For this report they reviewed sabbatical policies for 50 colleges and universities across the country (four year public research, four year regional public, four year private and two year community college). Many of the sabbatical policies shared common characteristics. The offering of sabbatical leaves to full time faculty members (usually every seven years) was the most widespread practice. It is a widely held belief that the knowledge and reinvigoration gained from spending time away from regular faculty routines improves faculty performance upon their return to their regular responsibilities.

The Merriam-Webster online definition of sabbatical is “a break or change from a normal routine (as of employment).” Why do university faculty members take sabbaticals? While there are many reasons, they generally fall under the following categories: (1) to catch up on work such as writing journal articles, finishing book manuscripts, or carrying out research (Fogg, 2006; McClain, 2005, 2006; Wilson, 1999); (2) to re-tool, that is learn new things, and improve teaching (AASCU, 1999; Fogg, 2006); (3) to rejuvenate and to cure burn out (McClain, 2006; Wilson, 1999); (4) to do something the faculty member has never done before, such as travel and thereby globalize their perspective (Fogg, 2006); (5) to plant the seeds of future work (McClain, 2006); and (6) to attend to personal matters like aging parents (McClain, 2005; Treckel, 2004).

Traditionally, sabbaticals have afforded faculty members the opportunity to travel. Today, an increasing number of faculty members are taking sabbaticals without leaving their home. Advances in technology and the increasing cost and hassle of sabbatical arrangements (e.g. arranging for a house sitter) have made work-from-home sabbaticals more practical and commonplace (Wilson, 1999).

Interestingly, more businesses are recognizing the benefits of employees who take sabbaticals. Companies are using sabbaticals to prevent costly employee burnout and to attract the best workers (Chura, 2006; Overman, 2006). These sabbaticals can create a sense of company loyalty. However, the Society for Human Resource

Management estimates that only about five percent of companies offer sabbaticals (Jenkins, 2007; Overman, 2006).

Another recent trend is the use of sabbaticals to gain additional work experience. Institutions such as Longwood College, Southwest Missouri State University, and West Virginia University allow faculty members to work for a corporation or non-profit group to gain experience relevant to their discipline (Wilson, 1999).

Faculty members who take sabbatical leaves away from their university most often visit another university, a government agency, or a research institute. Faculty members within the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida follow a similar sabbatical pattern. Over the last two and a half years, 26 faculty members in IFAS applied for sabbatical leaves. During this time, no assistant professors applied, while six associate professors, and 11 full professors sought sabbaticals. The most likely reason that no assistant professors applied for a sabbatical is that assistant professors have approximately seven years to get promoted and tenured, and that most sabbaticals are not granted until after seven years of employment. There were two agent II extension agents (similar to an assistant professor position in extension), three agent III extension agents (similar to an associate professor position in extension), and 4 agent IV extension agents (similar to a full professor position in extension) who applied for a sabbatical.

Of these 26 faculty members applying for a sabbatical, only one extension faculty member mentioned working indirectly for a company as part of their planned sabbatical experience. The other 25 faculty members listed other universities (e.g., Earth University in Costa Rica, the University of New Zealand, etc.), and government agencies and research institutes (e.g., U.S. Forest Service, The Sports and Turf Research Institute of New Zealand, Beijing Institute of Genomics, The National Park Service, etc.). It should be noted that the majority of Agent II and Agent III applicants listed attending a university to complete an advanced degree as required to attain Agent IV status. Interestingly, none of the faculty members applying for sabbaticals indicated plans to work at home.

Industry-based sabbaticals are an alternative to university-based sabbaticals. A sabbatical spent with industry can expose faculty members to a wide range of issues facing agribusiness firms, issues that can be used to update faculty members' knowledge and experience. Industry-based sabbaticals may advance research agendas and provide new insights for teaching and extension programs. Moreover, working with industry might provide faculty members with access to information that would otherwise be proprietary. In some cases, faculty members may gain access to data sets, such as those provided by Nielson, that can be cost-prohibitive to university researchers.

The benefits of taking a sabbatical with industry may spread far beyond the individual faculty member. The host company may also benefit from the skill set of the faculty member and their rigorous research methods. Collaboration may also lead to closer ties between the company and university with benefits for students, other faculty members, and programs.

Given the reported benefits of taking a sabbatical within industry, why don't more faculty members choose this focus for their sabbaticals? Perhaps it is the absence of industry ties that makes arranging a six to twelve month sabbatical difficult. Possibly, the benefits of such sabbaticals are not widely known or it may be perceived as risky to take a non-traditional sabbatical. While most faculty members are highly regarded by industry, there is a considerable amount of apprehension on the part of business regarding how to best utilize the skills of faculty members. Additionally, there may be cautiousness on the part of industry to share business secrets with academics for fear that these secrets will become knowledge that competitors could access.

Perhaps one of the most significant reasons that more faculty members don't consider industry-based sabbaticals is the pressure to be promoted in the academic system. Faculty members often choose sabbatical activities that will directly contribute to success in the promotion process, such as writing grants, carrying out research, and finishing publications. A faculty member must carefully consider whether an industry-based sabbatical will enhance his or her performance given the existing reward system.

Consulting

Faculty members at universities have a unique opportunity to share their intellectual property with industry because they bring value through their in-depth investigative techniques, rigorous methods, and objectivity. Industry consulting is attractive because it allows faculty members to supplement their salary and gain industry expertise at the same time, a valued asset in agribusiness programs.

To describe some of the pros and cons of industry consulting, we use as an example a consulting project conducted by the four authors and another researcher and reported by Batista (2005). The team consisted of four researchers from four different universities and a private consultant. The client for this project was Galaxy Nutritional Foods International, a publicly-traded, Florida manufacturer of natural foods and non-dairy cheeses with annual sales of approximately \$40 million. The firm's major problem was that it was losing money. The company's CEO hired the team to conduct consumer research for the purpose of re-staging the company's brand as part of a turn-around strategy. At the time the group was hired, the CEO indicated that there were several key reasons for hiring a consulting team made up primarily of university researchers; he thought it was a cost-effective way to

conduct the research; the team brought a level of objectivity and thoroughness the CEO felt was lacking from alternative consultants; and they injected a fresh perspective that he believed was necessary for the turn-around.

Of all the benefits of consulting, monetary compensation probably ranks at the top. Faculty members can often earn substantially more on an hourly basis than what they earn from their university position. Because faculty salaries are typically lower than industry salaries, many faculty members are drawn to consulting because of the money. For some people, it is a means for them to pursue their passion of teaching and research and still maintain an acceptable standard of living.

A key benefit of industry consulting is that it is often a means to professional development. Consulting provides faculty members with the opportunity to practice and refine what they are teaching in the classroom. Instructors often find that their teaching is enhanced because they are able to supplement the teaching of theory or methods with practical industry examples. A faculty member's ability to share his or her experiences and lessons with his or her peers, students, and other businesses is a significant practical benefit from a consultancy. Case studies, lectures, conference papers and posters, are ways to share the experience. In agribusiness management, these vehicles add tremendously to the discipline's body of knowledge. The Galaxy project also benefited several students who were involved in the project and who were able to see first-hand the application of methods they had learned in the classroom.

Researchers benefit from industry consulting because it deepens their understanding of the industry, how businesses operate, and the problems companies face, and thus encourages the development of innovative methods to address difficult problems. The Galaxy marketing project illustrates these points. The CEO and key shareholders were motivated to work with the consulting team to identify practical solutions to the company's marketing problems and return it to profitability.

Industry consultancies may also provide direction to a research program. A researcher who is unclear as to his or her research agenda, may find direction by working with industry. Researchers who need company or industry data may also improve their access to such data through the relationships they cultivate by consulting. There is a strong tradition in business schools of collaboration between business faculty members and companies. Agribusiness researchers could benefit by following their lead to enhance their professional skills and research programs.

An often-overlooked benefit of consulting is that consultancies may be a good way to promote faculty members and their universities to companies. One consultancy may lead to another through the interactions among the professionals who participate in

the project. The Galaxy project led to another similar project with one of the nation's largest food manufacturers.

A key disadvantage of consulting is that it can detract from a faculty member's other responsibilities. Some faculty members have been criticized because they are perceived as spending too much time consulting and as a result have neglected their research or teaching responsibilities, or both. Another disadvantage of consulting is that it is often not possible to directly share the results or experience gained from the project because the information is considered proprietary. Galaxy was the leading merchandiser of non-dairy-cheese products in grocery stores' produce departments. Because of competitive concerns, the results of the project could not be published to avoid compromising the firm's competitive advantage.

We should also note that ethical questions are sometimes raised concerning faculty members consulting. Two issues that are commonly raised concern the use of university resources for personal gain and the amount of time that faculty members should be allowed to consult. Furthermore, most universities have policies in place that provide guidelines for faculty consulting. These policies often address issues such as potential conflicts of interest, use of university resources, and required reporting. Extension personnel are often subject to additional restrictions.

Outreach

We use the term outreach to encompass those opportunities to "reach out" to the agribusiness community. In the field of agriculture, outreach has been common practice through the Cooperative Extension Service, founded in 1914. The purpose of extension is to "extend" information developed at land grant universities to those who need it. Many faculty members have extension appointments in addition to a research and/or teaching appointment. Because extension outreach activities are very broad they are outside the scope of this article. However, there are many outreach opportunities for faculty members without extension appointments, including conferences, seminars, workshops, speaking engagements, executive education programs, and other programs that are useful to agribusinesses. In the following paragraphs we highlight a few of these opportunities.

One of the principal ways that departments connect with graduates and agribusiness firms is through conferences and seminars. These programs may be repeated on an annual basis, as is done with outlook conferences, or with a different theme for each program. Many such programs have a long, distinguished history. Conferences and seminars often take advantage of a faculty member or department's expertise and offer an opportunity to bring a natural constituent base to campus. This can have a high payoff in terms of developing and strengthening relationships and providing opportunities for interaction. Conferences and seminars

are often offered on a cost basis, whereby the sponsoring institution prices the program so that it hopes to recover the direct costs of running the program.

In recent years, many institutions have developed executive education programs to extend the boundaries of traditional teaching and research activities. Executive education programs are many and varied. Some target specific audiences, while others are more topic-oriented. They typically vary in length from one or two days to week-long programs. Executive education takes advantage of the knowledge base possessed by universities and offers participants the opportunity to learn and interact with a group of their peers. Such programs offer faculty members and departments many advantages including additional income, opportunities for collaboration on research projects, closer ties to industry, and potential consulting opportunities. They can be very profitable for the sponsoring institution. However, such programs can be very time-consuming to organize.

Student Enrichment Activities

In this section we address some of the many other opportunities for universities and industry to collaborate in ways that benefit students. Our list is not exhaustive, but we have tried to highlight some of the most common and beneficial activities that enhance the student experience.

Employment opportunities

Industry professionals are uniquely suited to provide employment opportunities for students. It is not uncommon for some firms to have a strong relationship with a university or department. Such relationships are mutually beneficial. Employers hope to get access (often early access) to the best students and may return to recruit year after year. Departments benefit by helping place their graduates with successful companies. Many departments develop reputations for producing students with specific strengths, such as strong quantitative skills, or solid financial training, which makes their students particularly attractive to certain employers.

Internships

Internships are highly sought after by students. They provide work experience and a chance to learn about potential careers. Moreover, students are frequently paid for their services. Students often find that the internship experience enhances their marketability and often gives them an inside track to employment opportunities with the company with which they interned. Another potential benefit is exposure to the agribusiness industry and increased knowledge of career opportunities.

Companies are motivated to offer internships for several reasons, including fulfilling short-term work needs, particularly when the work is seasonal, and for

project work. For both students and employers, internships are a means to determine the fit between prospective employer and employee, with little risk. It is not uncommon for an internship to end with an employment offer.

There are few drawbacks for students, largely because many students work internships into their summer or part-time work plans. However, when this is not the case, students may find that they may be forced to delay graduation. Depending on the specifics of the internship, students may be faced with relocation costs or a negative experience with a company or supervisor.

From the industry perspective, the internship gives the company the opportunity to evaluate a potential employee at a low cost. Furthermore, as a temporary employee, the company is able to train the potential employee in specific company procedures and company culture. The company may also benefit from increased exposure to potential employees who may not have known about the company prior to the internship. Moreover, as stated in the National Food and Agribusiness Management Education Commission (NFAMEC, 2006) review on the state of agribusiness education, a benefit that accrues to industry from internships is the potential retention of the best and brightest students in the agribusiness industry (not simply the company involved).

Many companies do not offer internships, or may do so only sporadically. Internships can be time consuming to manage and students may receive more benefit than does the company. This is particularly true for small or medium-sized companies that have not previously hosted interns. For these reasons it is particularly useful to develop a relationship with a company and to develop an internship program as a partnership. Doing so helps to institutionalize the program and makes it easier and less time consuming to manage.

There is also a cost to academic departments wishing to implement an internship program. Industry partners need a consistent contact within a department to gain access to the best students in a timely fashion. This requires a department to devote resources such as a faculty member or staff person to coordinate such a program. Recent experience with the departmental advisory committee of the Food and Resource Economics Department at the University of Florida made it clear that industry prefers a single faculty member who can be the sole contact for internships and job placement.

Mentoring

There are few formal industry-student mentor programs in the field of agribusiness. One such program is offered by Santa Clara University's Food and Agribusiness Institute (Baker, 1998). All students pursuing the Food and Agribusiness concentration within the MBA program are offered the opportunity to be assigned

an industry mentor. The major benefits for students include career counseling, the opportunity for practical experience through an internship, future employment opportunities, and networking.

Experience with the mentor program at Santa Clara University has been almost exclusively positive. Students are paired with mentors who are likely to be a good match and who already have a commitment to the institution. When a mentor pairing has not been successful it is usually because the mentor-student relationship simply did not develop. Managing a successful mentor program can be time consuming. Although some relationships take off immediately due to an aggressive response from either the student or mentor, this is often not the case. A successful mentor program should have a coordinator who will arrange for the students and mentors to meet, encourage students and mentors to pursue opportunities, such as company visits or internships, check in occasionally, and monitor the relationships to ensure that the objectives of the program are met.

Site Visits

Company visits are frequently requested by participants in programs offered by educational institutions, visitors, and students. While student motivation may be suspect (anything is better than sitting through another lecture), a visit to the field can enhance the classroom experience. Faculty members may schedule a site visit to illustrate the application of a particular method. It can break the monotony of lecture after lecture and help students better retain information. Additionally, in a field with an industry focus, it may provide students with their initial first-hand exposure to the industry.

While a few companies offer tours for individuals and groups, most companies do not. Because many firms are protective of their intellectual property, it is often difficult to arrange a company tour that does more than show a part of the process through a visitor window. It is extremely helpful to have a relationship with someone in the host company who will arrange a custom tour that is suited to your educational objectives.

In-Class Visits (Guest Speakers)

Perhaps the least costly and most common interaction between industry and students is in-class visits by industry members (or similarly, visits to student organizations such as an Agribusiness Club). The use of guest speakers is common practice in academics, particularly in the professional schools.

Typically, the individual industry member (or a team from a company) will travel to the university to meet with students in a classroom setting. Usually limited to approximately one-hour of contact time, the industry member often shares his or

her experiences, discusses the application of a particular tool or method, presents information about the industry or company, and, sometimes, offers information about job and internship opportunities with his or her company. The principal benefit for the company is the opportunity to spend time with students to promote his or her company and to encourage students to pursue activities that will make them better potential employees and therefore more marketable. Industry executives will frequently encourage students to pursue internships, become a member of an industry club, or take a leadership role in an organization. Depending on the location, the cost of in-class visits is limited to travel costs, the time the speaker must spend away from the office, and the time to prepare the presentation.

Students typically enjoy industry speakers, especially when the both the instructor and speaker have worked to ensure that students will benefit from the presentation. This involves some coordination on the part of the instructor and speaker to ensure that the speaker understands the instructor's expectations and is prepared to meet them.

As with other forms of industry-academic interactions, arranging for a guest speaker to visit the classroom is easier when a relationship exists between the prospective speaker and the faculty member or institution.

Industry Advisory Boards

Industry advisory boards provide a convenient mechanism for faculty members and departments to connect with industry. As the name implies, the board is made up of members working in, or sometimes retired from, industry. As such, industry advisory boards are best suited to benefit universities in those areas where industry has the most to contribute in either knowledge or resources. These include fundraising, jobs, internships, site visits, guest speakers, and curricular matters. Since some of these activities have been addressed in previous sections, in this section we will focus on the contribution advisory boards can make to fundraising, curriculum review, as well as providing some insights on effective use of advisory boards. Although we refer to industry advisory boards with reference to a department, the discussion applies equally well to advisory boards for a college, school, institute, or other academic unit.

Fundraising

Fundraising is one of the key uses of advisory boards. People working in industry, particularly company owners, are at the intersection of those people with the financial resources and the inclination to support academic departments. Benefactors often wish to support a particular disciplinary area by providing scholarships, professorships, or research funds in an academic area related to their business. Advisory boards may be used to cultivate relationships with potential

donors, allowing them to become familiar with an institution and its people, and eventually strengthen their ties to the institution, its faculty, and its administration. A position on an advisory board may also be a way to thank a donor for his or her contribution to the organization. For many people in business it is an honor to serve on an advisory board.

Curriculum review

If you ask industry professionals for advice on curriculum you'll get no shortage of answers. Of course, it's in their self-interest to suggest that students be trained with the skills that their organizations need. However, colleges and universities are more than training grounds for future employees. They are also charged with providing a broad-based education that will prepare students for a lifetime of learning. For departments whose students earn professional degrees, the challenge is to provide students with an education that fulfills the general education requirements of their institution as well as the required professional skills. This has become more complicated as the amount of knowledge continues to expand and what is expected of students continues to increase.

There are several ways to obtain industry input on the curriculum. Industry leaders are often invited to participate in program reviews, such as those conducted by accrediting agencies. Industry input may also be solicited directly from academic departments. Advisory boards are particularly helpful with the latter. Board members will typically be familiar with the department, its programs, and its students and graduates. It goes without saying that they will be well-informed as to what graduates need to be successful on the job. Advisory board members may be surveyed regarding the curriculum or they may be invited to serve on committees or study groups that are charged with reviewing the curriculum. Because faculty members are ultimately charged with overseeing the curriculum, it is helpful to be clear that the role of the advisory board is to provide input and recommendations, but that the responsibility for the curriculum rests with the faculty.

Insights for Managing Advisory Boards

As discussed in the above paragraphs, industry advisory boards serve a variety of purposes. The functions of the advisory board should determine the composition and organization of the advisory board. It is our experience that the most effective board members have a commitment to the institution. They are the most likely to agree to serve, attend meetings, and contribute time and resources to the institution. Departments with a long history, many alumni, and established relationships with industry will find it easier to attract highly qualified board members. When these criteria are not met, it will be more difficult to attract qualified board members and early efforts should focus on establishing relationships that will establish a foundation for a strong board.

The structure and organization of the advisory board will determine how much control the department has over the board. Because of the advisory nature of the board the department typically has a great deal of control over appointment of members, setting the agenda, establishment of committees, and other important matters. Often advisory board members will have little experience serving on such boards and will rely on faculty members or administrators for guidance. This puts responsibility for the success of the board squarely in the hands of the department. We have found that the following guidelines will result in effective use of the advisory board and ensure that both board members' and faculty members' time is well-utilized:

- set high expectations – successful people are used to meeting challenges;
- organize the board into working groups that match the major functions of the board, such as fundraising, curriculum review, industry relations, etc. – the difference between a working group and committee should be more than semantic and should imply an expectation for results, which will be appreciated by industry professionals;
- leverage board members' positions in industry to draw on the time and resources of other influential industry people;
- ensure that the board meetings are run efficiently and that they are more than an opportunity for the department to report to the board; board members should have an opportunity to make a contribution.

Concluding Remarks

In this article we present an in-depth discussion of opportunities for industry-academic partnerships. For a brief summary of the various types of collaboration and the key advantages and disadvantages of each the reader should refer to Table 1 (*see Appendix*).

The focus of this article is on describing the opportunities for collaboration between faculty members (or departments) and industry and the benefits and pitfalls associated with each type of collaboration. In most cases, we conclude that developing industry-academic partnerships can result in substantial dividends for both industry and faculty members when both the pros and cons are taken into consideration in planning the collaboration. We close this article with some insights we have gained for managing partnerships between academia and industry.

Collaboration with industry can be particularly fruitful for young researchers. This is especially true in an applied discipline such as agribusiness management. Industry managers have much to contribute to the discussion, including ideas for research problems, access to hard-to-get data, and funding or research studies. From the faculty member's perspective, it is important to structure such collaborations such that the results are broadly applicable, objective, and publishable.

Industry collaboration can also enhance a faculty member's teaching program. Interaction with industry managers will inevitably result in a lively discussion of what is important and relevant. Industry managers can help faculty members understand their most pressing problems and the tools students need to be successful in the workplace. Collaboration with industry can also be a rich source of ideas for classroom examples and data for problem sets that will make the teaching environment more relevant and interesting.

Finally, industry advisory boards are an effective mechanism to engage industry managers and executives and initiate many of the types of partnerships discussed in this article. A position on an advisory board involves a commitment on the part of all members. Advisory boards are effective at strengthening ties between faculty members and industry managers and can result in contributions from the industry member in many areas, including research projects, fundraising, curriculum review, student employment, internships, and in-class visits.

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Appendix:

Table 1: Key Dimensions of Industry-Academic Partnerships

	Joint and industry sponsored research projects	Long-term student-centered projects with industry	Short-term student-centered projects with industry	Sabbatical leaves with industry	Consulting	Outreach	Internships	Mentoring	Site visits	In-class visits	Industry advisory boards
<i>Company ability to learn about potential employee</i>	Depends on project	High	Medium	N/A	High	High	High	Medium	Low	None	Depends on interest
<i>Company benefit in solving a problem</i>	High	High	Low-Medium	High	High	Medium-High	Low	None	None	None	N/A
<i>Student exposure to potential employer</i>	Depends on project	High	Medium	N/A	N/A	N/A	High	Medium	Low	Low	Depends on interest
<i>Insight gained for student</i>	Depends on project	High	High	N/A	N/A	N/A	High	Medium	Low	Low	N/A
<i>Investment cost to set up effective program</i>	Medium	Medium	Medium	Medium	Medium-High	Depends on program	High	Medium	Low	Low	Low
<i>Financial cost to company</i>	High	High	Low	High	High	Low-Medium	Low-Medium	Low-None	Low	Low	Low
<i>Company time commitment</i>	High	High	Medium	High	High	Depends on program	Medium	Low	Low	Low	Low
<i>Risk of variability in quality of information gained from company</i>	Low	Medium	High	Low	Low	Low	High	N/A	Low	N/A	N/A
<i>Cost to student</i>	N/A	Low	Low	N/A	N/A	N/A	Medium	Low	Low	None	N/A
<i>Cost to university of partnering</i>	Low	Low	Low	Medium	N/A	Depends on program	Medium	Low	Low	Low	Low