

Research Article

Nudging Agricultural Business Students into Successful Online Networking

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Abstract

In an increasingly digital and interconnected world, businesses continue to rely more on applicants' online networking efforts as a positive marker in the hiring process. If students' career prospects rely on savvy professional social media use, it is incumbent on agricultural business programs to emphasize the importance in the classroom and incorporate education about the responsible use of those tools into the curriculum. In this study, students in an agricultural sales course developed LinkedIn profiles with incrementally stricter rubrics and requirements to determine how stressing specific components could nudge them to improve their professional online presence. In particular, the assignment required students to connect with other LinkedIn users outside their "safe" network (i.e., not professors, friends, or alumni of their university), leveraging those external reviewers as a mechanism to improve digital profile quality. Different treatments varied the numbers of required connections in the assignment. This external review put students' "skin in the game," since their public profiles would be scrutinized by real-world professionals. Results indicate that with stricter external-validation requirements, students' efforts improved. The long-term objective is to convince students of the value and efficacy of building and maintaining an active professional social media presence and brand.

1 Introduction

Regardless of teaching philosophies and pedagogies, a major objective of any agricultural economics or business program is to prepare students for success on the job market. Not every program has a designated agricultural career planning and development course, and as such, the responsibility for this training often falls either on administrative career services offices or on individual students. Alternatively, it may be incorporated deliberately into course content, with instructors bearing the primary burden of convincing students that career planning and networking are valuable (if not indispensable) activities. Although professors are experts in their disciplines, many are—at least to some degree—disconnected from the professional world. Many if not most professors have opted out of private-sector careers in favor of academia, consulting work notwithstanding. And even for those with prior industry experience, the relevance of that background diminishes rapidly with the professor's academic tenure (Lipinski & Kosicek, 2016).

Networking can build social capital, and it is correlated with long-run career success in terms of salary growth (Wolff & Moser, 2009). Connections made and maintained over time often provide inroads for students entering the job market as well as useful steppingstones for those midcareer professionals seeking advancement. Social media increasingly provide digital networking opportunities that act as a supplement to the traditional options. Although in-person networking often is still viewed as a first-best option for building social capital, the COVID-19 pandemic made it difficult for instructors to maintain experiential learning opportunities where students could safely network in person and access valuable face-to-face time with potential employers. This further illustrated the increasing value of digital networking platforms such as LinkedIn in contemporary society. Even years after the onset of the

pandemic, the labor market has retained some of the changes it adopted out of necessity for mere convenience.

Strategic online networking through LinkedIn provides substantial professional information benefits and improves users' social capital (Nikitkov & Sainty, 2014; Utz, 2016). Although there is little evidence that social media assessments can predict candidates' performance on the job (Roth et al., 2016), recruiters nonetheless use them in the hiring process; hence, the social capital associated with social media use can translate to improved outcomes on the job market. Evidence is mounting—for better or worse—that social media and LinkedIn specifically can help students' career prospects (Brewer & McCarthy, 2023; Peterson & Dover, 2014). However, convincing students to internalize this reality can be a challenge for professors, especially those in applied majors outside of traditional business. Recent research has indicated that students' use of LinkedIn exhibits systematic flaws prior to entering the job market (Daniels et al., 2023). In particular, Daniels et al. (2023) found that students failed to adequately describe their relevant experience (including poor or incomplete description of tasks and responsibilities), included limited or inadequate introductions with grammatical and spelling errors, and approximately one in four neglected to include any profile image/photograph (some of those profiles including an image/photograph did not use an appropriate or professional one). With that in mind, there has been an effort to introduce LinkedIn as a tool in marketing and business courses (Cooper & Naatus, 2014; McCorkle & McCorkle, 2012). This can be incorporated as an experiential learning opportunity with real-world implications (Slone & Gaffney, 2016). Although buy-in might be high for business students, this lesson can be particularly difficult to teach for incoming students with a rural or farming background, where technology and digital networking are not yet fully woven into the fabric of local agribusiness activity. There remains considerable work yet to be done to examine Generation Z's perception, preferences, and adoption of technology, but early work suggests that students studying in colleges of agriculture exhibit a distaste for digital technology and social media (Blackwell, 2020). Blackwell (2020) finds that though many agriculture students recognize the necessity of social media in professional development, the costs in terms of mental health and other issues are substantial. Regardless of students' perception of the dangers of digital media, the professional world has increasingly embraced social media as low-cost, high-value tools for marketing and recruitment. The growing prevalence of social media as a source of knowledge dispersion in agriculture (Morris & James, 2017), especially in light of the recent proliferation of artificial intelligence and increasing complex farming technologies, seems to indicate an expanding necessity for young agriculturists to engage in social media for their career success, in terms of both knowledge enhancement and career development.

Incorporating the creation of a LinkedIn profile into a professional development module in an early agribusiness course—either Introduction to Agricultural Business or Introduction to Agricultural Sales—prepares students early on for the importance of social media in the current business environment. This allows them to curate an adaptive outward-facing professional profile that can jump-start their career search and aid them in securing internships along the way. However, if student buy-in is low, this approach could backfire. Students may not put in the mandatory effort up front, or they could let their accounts languish in disuse. This is where “nudge theory,” a concept developed by Thaler and Sunstein (2008), comes into play. This directed approach, also dubbed “libertarian paternalism,” gives individuals the ability to make decisions for themselves (i.e., freedom of choice) while subtly promoting an option deemed to be in the subject's best interest, particularly when subjects empirically have demonstrated a limited likelihood of pursuing that better path. This theory has been applied to a wide variety of problems since it was first developed, from health care (Last et al., 2021; Nwafor et al., 2023) to finance (Cai, 2019; Gajewski et al.) to education (Damgaard & Nielsen, 2018), and Richard Thaler earned the 2017 Nobel Prize in Economic Sciences in large part due to the broad applicability of nudge theory. Although the ethics of nudge theory and its potential manipulation and subversion of individual liberties have been discussed and contested extensively (Schmidt & Engelen, 2020), applications continue unabated.

Incorporating nudge theory, this research proposes two tactics agribusiness programs can undertake simultaneously to maximize student buy-in to a career-enhancing social media project. First, require students to make professional connections that are both internal and external to the university system. Students are generally less reluctant to make connections with their peers and professors. Those are “safe” connections that will likely forgive grammatical and other minor errors, recognizing that early college students are not yet fully prepared for the workforce. As those connections can be pivotal down the road as students enter the workforce, the significance of internal connections should not be undervalued. However, students do not have any real skin in the game, so to speak, when they only connect to people already within their university sphere. External connections, on the other hand, are crucial for the present expansion of one’s professional network. Requiring students to find contacts external to the university system leaves them open to a more intensive scrutiny. This has multiple facets that will be useful to students: it gently nudges students toward creating a social media profile that will stand up to external validation; it expands students’ professional networks; it signals to potential employers outside the university/alumni sphere that the student is prepared for a career after completing their academic studies.

There are risks associated with an assignment that requires students to connect with professionals outside their safety zone extending beyond the general risks of “stranger danger.” If students fail to recognize the potential impact of a poor social media profile, they may advertise themselves as a poor job candidate or an unprofessional professional. However, failing this way early on in their undergraduate studies will allow time for their reputations to recover, and it should allow their professors to help them construct a better professional outreach effort with minimal long-run consequences. If students create such a profile after their studies conclude with no help from their instructors, the damage may be more substantial and harder to ameliorate.

Another risk inherent in this project involves its timing. Students who are at an early stage in their undergraduate studies may not have their long-run goals as firmly in mind. This may lead to a social media profile that becomes inaccurate or incomplete as time progresses and the students’ plans come into narrower focus. This could be addressed in several ways, but perhaps the most feasible way for the academic institution to help would be for the profile to be a continuous project that shows up in multiple places through the agribusiness curriculum. For example, any course with a prerequisite that requires this social media profile project would be a candidate to continue the project in a more advanced professional development unit or module. For example, if an upper-division Farm Management course included Introduction to Agribusiness as a prerequisite, then that upper-division course could require students to revise their profile. This would encourage students to maintain their profile between semesters, presumably nurturing a sense of relevance for students who might be skeptical about the usefulness of this type of online networking tool.

Many agribusiness programs include a pre-professional work experience, whether it comes in the form of a practicum or a traditional internship. This does not take the place of networking, but it can help expand the student’s professional connections. Use of an online networking platform can improve students’ likelihood of obtaining internship opportunities, and employers, in turn, can endorse students’ skills directly. It has the potential to create a virtuous cycle. For professional development opportunities, it is important to use a university’s resources—for example, a career planning and development office—to help students gain general knowledge about career planning and joining the workforce. However, by relying exclusively on a career office, faculty may underestimate the value of their own field-specific expertise. It is important that students have access to both.

On a general level, social media presence and savvy have become necessities for many careers. In the hiring process, businesses examine candidates’ social media behavior (Alexander et al., 2019). A student who is not appropriately represented will garner less attention late in the hiring process. For hiring managers, social media are evaluated for content quality, major criteria for elimination (e.g., drunken fraternity shenanigans captured on film), and minor criteria for elimination (e.g., poor grammar

or personal content that does not reflect positively on the job candidate and may have consequences for the business). Absence from social media can signal to hiring managers either non-transparency (if the candidate has a hidden account) or an inattention to the broader digital world—a severe misstep in an ever-increasingly connected world. Social media provide opportunities to showcase one’s professionalism, tact, attention to detail, and a curated public persona or personal brand that the candidate will likely continue in the workplace. For this technology-driven generation, a social media profile is likely to provide the invaluable first impression that previously had been created on a first in-person encounter.

2 Data and Experimental Design

Across five semesters in an Introduction to Agricultural Business course, students were required to create and activate a LinkedIn account.¹ Similar to the assignment outlined in Peterson and Dover (2014), a rubric was provided with guidelines and expectations for profile construction (see Table 1 for the rubric and the The 10 Components of a Great LinkedIn Profile. (2017, 10/18/2017). Walrath Recruiting, Inc. Retrieved 3/30/2023 from <https://walrathrecruiting.com/10-components-great-linkedin-profile/>

Table 1: Rubric for Grading the LinkedIn Profile Assignment as Presented to Students

Criteria	Description	Points Possible
Profile Photo and Intro	Is this photograph professional and appropriate to the types of connections and positions the student might be targeting? Does the student list a title/position/etc. along with the photo? Will this work for networking purposes?	4
Short Bio	Is this short bio appropriate? Is spelling and grammar accurate? Is there an adequate mix of personal and professional information that may entice potential employers?	10
Experience	Does the student list experiences similarly to the resume? Does this properly introduce the student’s work/volunteering background?	4
Education	Does the student list educational experiences similarly to the resume? Does this properly introduce the student’s educational background?	4
Skills and Endorsements	Does the student list skills similarly to the resume? Does this properly introduce the student’s skills?	4
Interests	This is an excellent section to offer more information about yourself than the resume allows. Does the student list some interests (professional and/or personal)? Are they appropriate?	4
Connections Requirement	Are there the appropriate number/type of connections? [Points correspond with specific levels of compliance, provided explicitly for each treatment.]	10
Organization, Appropriateness, and Success as an Introduction	How well/clearly is the profile organized? Is this profile professional and appropriate to the situation? Based on this profile/introduction, would someone searching for this person prior to a meeting be likely to work with them?	10

¹ All procedures for this study were pre-approved by the university’s Institutional Review Board (IRB-2020-818-E05-4005).

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Appendix for sample guidelines). This rubric included requirements for a name and headline, a professional-looking photograph, a short biographical blurb, education and experience sections, skills, and interests. Additionally, the instructor provided verbal descriptions of each section during class time

as well as examples (static image files) of high-quality LinkedIn profiles embedded in the assignment. This assignment included no milestones or benchmarks, but it is worth noting that students were required to create a separate resume at least one month prior to this LinkedIn profile assignment, so much of the required information would have been readily accessible for transfer into the online platform. The resume and LinkedIn profile jointly satisfy a course learning objective involving career planning and active professional development.

In the first treatment, students were required to make connections, but the affiliations of those connections were not specified (i.e., students could earn credit for connections with anyone; classmates, family members, professors, or professionals outside the university). In the second treatment, students were required to obtain the same number of connections, but 40 percent had to be external (i.e., not family, not affiliated with the university, either past or present). Ensuing treatments varied the proportion of external connections among those required.

The objective of this experiment is to determine whether having “skin in the game” via external validation improves the quality of students’ efforts in developing a professional social media profile. The rubric outlined clear explanations for how students could earn points for the assignment, with detailed instructions to ensure objectivity in scoring.

To evaluate profile quality, a profile quality score (PQS) was developed, taking into account several key elements of the LinkedIn profile that were not directly graded in the assignment but that recruiters noted as important (*The 10 Components of a Great LinkedIn Profile*, 2017; Grant, 2018). These elements included word count and summary quality (freedom from errors), listed skills and interests evaluated on quality and appropriateness, depth of education and experience entries, and the quality and professionalism of the profile image and other visuals and/or design elements. Figure 1 provides a more detailed outline of elements included in PQS construction. Although an individual’s number of LinkedIn connections is beneficial in terms of building a professional network and improving the

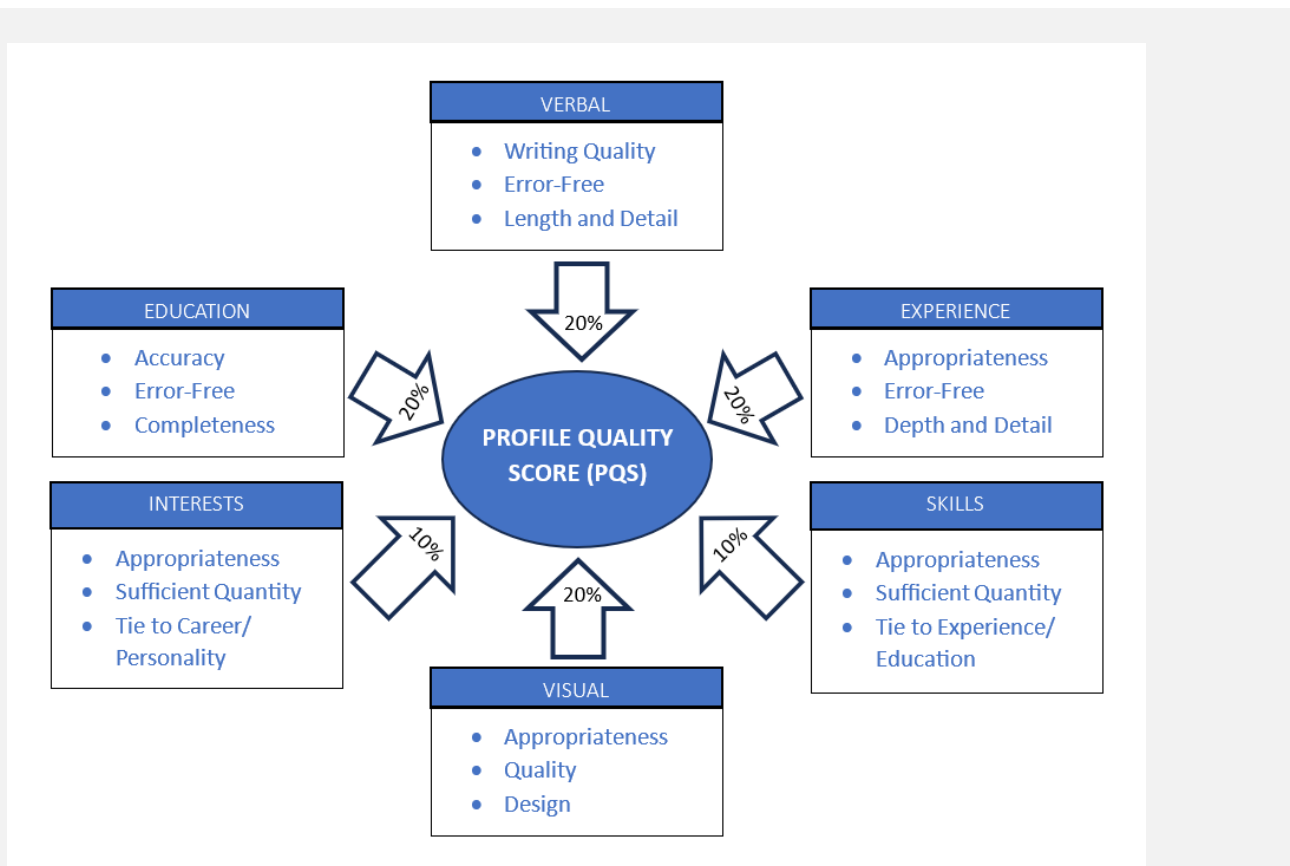


Figure 1: Schematic of Profile Quality Score (PQS) Construction

evaluation of recruiters, connections are excluded from the PQS because of their likely strong correlation with the treatment group.

Table 2: Pooled Demographics Across All Five Semesters

Class	Variable	Percentage Represented
Sex	Self-Identify as Female	39.36%
	Self-Identify as Male	60.64%
Class Rank	Freshman	18.58%
	Sophomore	36.07%
	Junior	25.68%
	Senior	19.67%
Race	Self-Identify as White	95.74%
Major	Accounting	0.53%
	Agricultural Business	85.11%
	Agriculture (General)	11.17%
	History	0.53%
	Interdisciplinary Studies	1.60%
	Natural Resources Management	0.53%
	Veterinary Science and Technology	0.53%

There were 188 observations across five semesters. Demographics are presented in **Error! Reference source not found.** Approximately 18.6 percent were first-year students, 36.1 percent were second-year students, 25.7 percent were third-year students, and 19.7 percent were in their last year of undergraduate studies. More than half of the students self-identified as male (60.6 percent), which was appropriately representative of the Agricultural Business major at the time. The course was taught at the same time every semester by the same instructor. Treatments are shown in **Error! Reference source not found.**, and average PQS and participation rates are presented in **Error! Reference source not found.** To accurately assess the difference in PQSs for completed profiles, observations for students who did not submit the assignment were dropped (leaving 176). This is noteworthy in that the more rigidly structured treatments may have influenced completion rates; however, differences in participation between the second and third treatments seem similar.

Table 3: Treatments and Specifics for Each Semester in the Experiment

Semester	Requirement
Spring 2020	No connections required
Fall 2020	3 connections required (1 external)
Spring 2021	3 connections required (1 external)
Fall 2021	5 connections required (2 external)
Spring 2022	5 connections required (3 external)

3 Model and Results

To assess the impact of various treatments on the quality of student LinkedIn profiles, the following model was estimated using a basic ordinary least squares (OLS) regression:

$$PQS = \beta_0 + \sum_{i=1}^3 \beta_i D_i + \dots + \epsilon$$

where D_i indexes the three treatment groups for varying connection requirements. Demographic information and other controls were also included to check the robustness of the regression results.

Table 4: Profile Quality Scores (PQSs) and Participation by Semester

Semester	Verbal	Experience	Education	Visual	Skills	Interests	PQS (%)	Class Pop.	Skip Rate
Spring 2020	50.583%	40.000%	56.667%	35.8333%	46.700%	30	46.700%	30	3.333%
Fall 2020	55.690%	72.198%	83.405%	61.638%	70.125%	58	70.125%	58	5.172%
Spring 2021	56.319%	74.479%	81.076%	70.833%	72.288%	36	72.288%	36	11.111%
Fall 2021	54.038%	72.436%	80.128%	70.513%	71.064%	39	71.064%	39	5.128%
Spring 2022	51.600%	45.500%	76.000%	53.000%	59.120%	25	59.120%	25	12.000%

Regressing PQS on connection requirements and course grades, there is a strong and statistically significant positive effect of requiring external connections (see **Error! Reference source not found.**). Course grades were reconstructed to exclude the LinkedIn Profile Assignment, but as expected, students with higher course grades (in percentage terms) tended to do better constructing their profiles. The first treatment implementing an initial mandatory number of external connections (33.3 percent) yielded a sizeable positive impact on LinkedIn profile quality. A slightly larger improvement occurred when the requirement was increased to 40 percent external connections. Those gains flagged when the more stringent 60 percent requirement was mandated, indicating a potential upper bound for the effectiveness of the proposed grading nudges.

Including additional regressors—semester hours, age, sex, and undergraduate classification (freshman, sophomore, and junior)—improved the explanatory power of the model without substantively altering the interpretation of the initial variables. Students identifying as female tended to fare better on profile qualities scores, and the treatment indicators remained statistically significant. Controlling for these additional regressors increased the magnitude of all three connection treatments. Neither age nor the number of hours each student enrolled in for the semester significantly impacted

Table 5: Results from Regression on Benchmarking by Percentage of External Connections

Variable	Model 1		Model 2		Model 3	
Constant	-1.131	(3.255)	-8.172	(4.976)	-4.791	(4.269)
33% external connections	4.535***	(1.253)	4.958***	(1.185)	5.291***	(1.117)
40% external connections	4.891***	(1.305)	5.696***	(1.308)	6.403***	(1.280)
60% external connections	3.094**	(1.408)	3.663***	(1.342)	3.432**	(1.314)
Course grade	0.143***	(0.038)	0.123***	(0.035)	0.133***	(0.033)
Semester hours			0.225	(0.159)	0.184	(0.155)
Age			0.206	(0.135)	0.175*	(0.957)
Female			1.615**	(0.646)	1.433**	(0.649)
Sophomore			-0.499	(0.790)	-0.364	(0.793)
Junior			-1.231	(0.906)	-1.124	(0.869)
Senior			0.937	(1.121)	0.532	(1.142)
Agriculture Business Major					-3.577***	(1.011)
Major Dummies Included		No		No		Yes
Observations		176		176		176
R-squared		0.2787		0.3473		0.4193

Statistical significance is reported at the 90% (*), the 95% (**), and the 99% (***) levels.

their PQS. Likewise, none of the classifications (freshman, sophomore, and junior) had a statistically significant impact on PQS, and in another robustness check, there was no significant impact of semester dummy variables (since some treatments were repeated in multiple semesters). Some majors had significantly lower PQSs relative to the control group of General Agriculture. Most heavily represented in the sample were Agricultural Business majors, who demonstrated significantly and substantially lower PQSs. It is noteworthy that the marginal impact of the two initial treatments were larger in magnitude, respectively, than the major effect for Agribusiness students, indicating a net improvement, whereas the most stringent treatment was closer to a net zero effect, accounting for only treatment and major.

Breusch-Pagan and White's tests indicate the presence of heteroskedasticity, so the standard White correction was applied and robust standard errors reported for both models in **Error! Reference source not found.** The low R-squared for the initial model indicates that the treatments and course grade account for only a little over one-fourth of the variability in the PQS. This indicates that there are additional factors influencing PQS that were not captured in our data. The additional variables included in the subsequent regression presented in **Error! Reference source not found.** do not strongly increase the explanatory power of the model. Even given the limited data at hand, the nudge does play a significant role, regardless of the level.

The regression results are interesting, but they do not capture the entire picture. With few exceptions, students who spent more time on the About section of the LinkedIn profile—in terms of writing quality rather than word count—tended to fare better on all other sections of the assignment. Perhaps once students made the decision to invest in the clarity of their profiles' verbal component, they bought into the entire assignment. In that respect, the About section could have served as a proxy for overall PQS. Many students were unclear on how to indicate their interests in a professional space. Many students selected unrelated or inappropriate interests to the detriment of their overall PQS. Hiring managers are most interested in education, experience, and relevant skills (preferably endorsed), but with more competitive positions, those missteps in the details could have a negative impact for marginal job candidates. Also notable in the data was the weak relationship between the number of connections and PQSs. Although the mandate affected profile qualities, the direct effect of total connections on PQS was less pronounced. Not all students met the connection requirements of the assignment, and some had far more connections than necessary. As the goal was to improve students' self-promotion efforts, the mandate served its purpose regardless of whether students satisfied that requirement.

One potential limitation of this research involves the timeline of its implementation. COVID-19 peaked in the first semester, right after the assignment deadline. While this was unlikely to affect student effort in that semester, students quickly became more aware of the importance of social media and technology in career planning and education in the following semesters as classes migrated online for a year. That could account for some of the improvements in PQSs. However, a semester-specific dummy indicated no clear statistically significant effects. Neither class size nor mode of delivery (virtual classroom vs. in-person) had any significant effect.

4 Concluding Remarks

As in many disciplines, the careful development and management of a professional online presence has become a crucial networking must for agricultural business and economics students to access internship opportunities and gainful employment upon graduation. Nudging students to network through social media—especially early in their university studies—leads them to more deliberately develop their online professional persona, likely improving their long-run career potential. By adding more stringent requirements for external profile validation, professors can actively push students to more fully engage and improve their outward-facing efforts. Revisiting these profiles sequentially across the curriculum can give credence to their significance. Continuously updated professional profiles can create a virtuous cycle of improving network reach and career development opportunities, hence bolstering the efficacy of

the process and further embedding it in the students' minds as an important tool for career improvement in agricultural business.

Although this research presents some clear, intuitive results, there are some limitations. In particular, a not insubstantial number of rural agricultural business students have confirmed or tacitly agreed upon employment opportunities prior to entry in the university (e.g., returning to run the family farm). For those students, networking may not seem as crucial for career success. Likewise, grades cannot be used as a motivator when completion is the goal as opposed to GPA. It is reasonable to expect that this nudge would be more successful for grade-motivated students without prior arrangements for employment.

The next objective for this project includes tracking student profiles and employment opportunities over time to assess the long-term effectiveness of pushing students to seek external validation of their professional profiles. Less than 5 percent of students reported having LinkedIn profiles prior to this assignment. At the time of this writing, nearly all former students' LinkedIn profiles are still active, in varying degrees of use. Comparing prior to current PQSs, it is possible to assess how well this project succeeded in convincing students how valuable an updated online professional networking profile is to career development.

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Appendix

Guidelines for “Profile Assignment”

Positive self-promotion is one key to getting a job or making a sale. In this media-saturated world, where the network of who you know can extend far beyond your physical location, social media is becoming unavoidably entangled in the self-promotion process.

For this assignment, students are expected to create a social media profile in [LinkedIn](#). At the very least, this should include a photo, a short bio (essentially an introduction), and anything else you feel is important to include in a professional introduction. For example, take your resume and include all your education, experience, and skills and incorporate them in your LinkedIn account profile.

If you already have a LinkedIn account, feel free to use that for this assignment but make sure you update it appropriately. The goal is to create a professional introduction that will serve as a client or potential employer’s first impression of you, your goals/values, and your personality.

[Spring 2022 Version:] In addition to building a professional social media profile, students will need to “Connect” with at least five other people. Two can be students in the class or UTM friends, faculty, or alumni, but at least three must be professionals who are not in any way affiliated with UTM (and not family). In other words, you’re going to have some skin in the game. Even if you have an existing LinkedIn account, you will need to make *at least five new connections* for this assignment. To receive a grade for the “Connections” portion of the assignment, you will also need to “Connect” with me. Since this is necessary for grading, your connection with me will **not** count as one of your five.

This assignment will be graded based on completeness, professionalism, and accuracy (grammar, spelling, etc.). The purpose of this assignment is for students to begin preparing to join the labor force. Maintaining a professional online presence is becoming an important element in the business world. It influences companies’ purchasing choices, managers’ hiring decisions, and many other aspects of your career. This assignment should give students a head start on building a profession online presence. And as I mentioned above, you can certainly use your actual online presence for this assignment. It is also a good way to introduce yourself to the instructor and your fellow classmates.

You will need to keep your LinkedIn account active at least until the assignment is graded, though I encourage you to keep it at least until the end of the semester. You may choose to attach your new resume that you created/revised earlier this semester to your LinkedIn account to provide potential employers with additional information.

If you have questions or concerns about this assignment, do not hesitate to contact me. For reference, here is a [link] to my own LinkedIn account. This should make it easier to “Connect” with me. For more information, see the LinkedIn lecture slides, and some additional hints can be found online (for example, at <https://www.linkedin.com/business/sales/blog/profile-best-practices/17-steps-to-a-better-linkedin-profile-in-2017>).