2022

Examining business students' workplace information use during internships and co-ops

Margaret Phillips
Purdue University, phill201@purdue.edu

Heather Howard
Purdue University, howar198@purdue.edu

Garrett Brewster
Purdue University

Examining Business Students' Workplace Information Use During Internships and Co-ops

Margaret Phillips[a]*, Heather Howard[b], & Garrett Brewster[c]

[a]*Purdue University Libraries and School of Information Studies, Purdue University, West Lafayette, IN, USA*
ORCID: 0000-0003-4511-8355
Email: phill201@purdue.edu
*Corresponding Author

[b]*Purdue University Libraries and School of Information Studies, Purdue University, West Lafayette, IN, USA*
ORCID: 0000-0002-9047-8555

[c]*Purdue University, West Lafayette, IN, USA*

Title: Examining business students' workplace information use during internships and co-ops

Abstract:
Information literacy is essential for business students as they prepare for the workplace they will enter after leaving the university. Prior to graduation, students must also prepare for the information needs they will experience during internships and co-ops. To optimize instruction and teach students the information literacy skills they will need on-the-job, librarians need to understand what information sources employers require students to use during internship/co-op experiences and in what ways. In this study we surveyed business students and alumni at a large Midwestern university who had completed an internship or co-op regarding their information use during these workplace experiences.

Introduction
At Purdue University, the Krannert School of Management prepares students for the workplace with a rigorous curriculum that includes coursework and real-world experiences. The Krannert School of Management has a strong relationship with the STEM side of campus, most notably with engineering, which helps attract hundreds of recruiters to campus each year. Though not required, many students complete an internship or co-op during both their undergraduate and graduate programs. The Purdue Libraries are well-integrated into the business program and teach credit-courses, are embedded throughout the curricula, and work directly with learning communities and other programs. To optimize instruction and teach students the information literacy skills they will need on-the-job, librarians need to understand what information sources employers require students to use during internship and co-op experiences and in what ways. Our research questions for this study were:

RQ1: What types of information tasks do undergraduate business students complete during co-ops and internships?

RQ2: What types of information sources do undergraduate business students use during co-ops and internships? How did they first learn about these sources? What is their perceived difficulty in finding these sources?

Business Information Literacy in the Workplace

Libraries strive to imbue our students with an understanding of the information sources and tasks they will need to complete once they are on the job. For years libraries have sought to learn about and update their understandings of the business information literacy needs of employers. The Business Research Competencies were developed in an attempt to capture and define the research skills needed by knowledge workers, including students, academics, entrepreneurs, and practitioners (Reference and User Services Association, 2019). Howard, Wood, and Stonebraker (2018) used curriculum mapping to assess the courses at two large business schools to determine if there were gaps between the Business Research Competencies and the curricula, as well as to evaluate the effectiveness of using the competencies as a benchmarking tool for academic librarians.

Klusek and Bornstein (2006) mapped business and finance career profiles from the U.S. Department of Labor Statistics to the ACRL Information Literacy Competency Standards to determine the information literacy skills associated with each job. They found that information literacy skills were highly valued in these occupations and that workers reported using these skills on the job. Conley and Gil (2011) surveyed business professionals regarding information literacy in the workplace and found that most had not heard the term *information literacy*, however did place high value on information literacy skills once the concept was defined.

In 2012, Sokoloff interviewed employers of business school graduates to determine how information skills are perceived and evaluated in the workplace. Almost all participants reported the important ways in which research and information are directly related to their job responsibilities, specifically, "the importance of research to inform decisions and recommendations; to develop programs, products, or services; to select vendors and partners; or to otherwise draw conclusions" (2012, pp. 10–11). Jewell et al. (2020) also interviewed employers to determine what information skills educators should focus on to best equip students for the workplace. Their study found employers identified information literacy skills as critical in the workplace, though there was a clear difference in how business information was used in academia as opposed to industry, with workplace information use focusing on a specific business need. They also found that people were an important source of information, creating a tie-in between information literacy and interpersonal skills. As with Conley and Gil's research, Sokoloff and Jewell et al. both found that employers had a difficult time understanding and defining information literacy concepts.

Gilbert (2017) examined job postings from advertising agencies to determine what information literacy skills are required by employers and how these skills are used in the different advertising careers. The study found evaluation, information use, collaboration, and technology skills to be highly valued in advertising positions. The skill of synthesizing information, however, was only mentioned in 6% of job postings.

Phillips et al. (2019) used curriculum mapping to determine if industry standards were being taught in the undergraduate business management curricula. Their findings show that while few courses showed evidence of teaching this aspect of information literacy, knowing how to find and use industry standards is critical for business decisions. They also identified several

opportunities for standards integration in the undergraduate curricula at the two large universities studied. Sokoloff (2012) also identified standards as a type of information being used in employers' organizations.

While research has been done examining employers' expectations of recent business school graduates, we were unable to find any literature exploring business students' information experiences during co-ops and internships. Jeffryes and Lafferty (2012) surveyed engineering students enrolled in a co-op program regarding their information experiences on the job. Jeffryes and Lafferty's work served as a model for this study, as we modified their survey instrument for a business discipline context.

Theoretical Framework

Lloyd frames information literacy as a sociocultural practice, intertwined with "social, historical, political, and economic ways of knowing that are a central part of a social site" (2010, p. 256). In academia, we often focus on traditional concepts of information literacy in a specifically academic context, such as finding peer-reviewed journal articles and the scholarly publishing process. In the workplace, however, there is a focus on the practical application of information and on experiential knowledge and know-how. Information literacy is contextualized within the process of becoming informed and of knowing in a context where, "workers draw information from their activities and weave this information to construct the practical intelligibility (know how) that is necessary to effectively perform and coexist within a community of practice" (Lloyd, 2010, p. 253). An employee might need to determine if they should find information through prior work internal to the company, outside information, such as a market research report or company dossier, or consult with a more experienced co-worker to navigate the information landscape.

Our approach in investigating actual strategies used to gather information was informed by the socioecological theories pioneered by Sandstrom (1994) as optimal foraging theory and expanded by Pirolli and Card (1999) as Information Foraging Theory (IFT). These theories surmise that information seekers will attempt to maximize their search results based on their local information landscape. This is impacted by several variables, including the time allotted for the search, the quantity and quality of information sources available, the abilities and knowledge of the seeker, and the perceived rate of gains in exploring additional sources. IFT makes an analogy between food foraging and information foraging, with information seekers using 'diet selection' to choose a mix of information sources, and 'within-patch' and 'between-patch' foraging to determine how long one should spend exploring one information source before switching to another, and the opportunity costs of investigating a particular source. IFT is particularly helpful when investigating how information seekers function in the workplace, rather than in an academic environment. Information in this environment has value in how it can help a worker complete a task or make a decision, rather than in the way an academic would systematically gather information for a research paper.

Methods

Data collection
We developed our survey to gather information about business student information experiences by modifying the instrument Jeffryes & Lafferty (2012) used to learn about engineering co-op students. We chose the Jeffryes & Lafferty (2012) instrument as a model because they targeted individuals who had completed employment experiences as students, the same as the intent for our study. Our modified survey was built into Qualtrics and consisted of nine questions about on-the-job information source use, types of information tasks completed, and participant

demographics (Phillips et al., 2021). The survey was modified to have a focus on business

information sources and tasks after reviewing the Business Resource Competencies (Reference

and User Services Association, 2019) and consulting with business librarians and undergraduate

business students. We targeted students and alumni who had completed an internship or co-op

while enrolled as a student in the Purdue University Krannert School of Management. Our

recruitment efforts included direct emails to student listservs, LinkedIn posts, and in-person

recruiting in the business library. All responses were gathered between October 2021 and

January 2022. This research was reviewed and approved as exempt by our university's

Institutional Review Board (IRB) (No. 2021-1361).

Data analysis
We downloaded the survey results from Qualtrics and performed all data analysis in Microsoft
Excel.

Results
We received 39 survey responses. The demographic data of the respondents is shown in Tables 1
and 2.

[Insert Table 1 Here]

[Insert Table 2 Here]

Information Tasks
We asked participants to indicate which information-related tasks they completed during their

internship or co-op experiences. Figure 1 shows their responses. Of the 39 respondents, all

reported having to complete at least one information-related task. Most respondents (59%)

reported completing multiple information tasks (two or more) as part of their internship/co-op

experience(s), with 33% reporting completing three or more information-related tasks.

The two most frequently selected information tasks were 'look up information on business news or trends' (67%) and 'research competitors' (38%). Responses for 'other' included 'review financial data,' 'prepare loan applications,' and 'review internal documents from client(s).'

[Insert Figure 1 Here]

Information Source Types
Additionally, we asked participants to report the information sources they utilized to complete the information-related tasks. See figure 2. The most frequently selected source was 'company information' (e.g., competitor information, financials)" (77%), followed by 'industry standards' (e.g., ISO) (38%) and 'articles (e.g., scholarly, trade, news)' (36%). Responses for 'other' included 'YouTube,' 'product information books from competitors,' and 'software specific to auditing and bookkeeping.'

Table 3 details the five most frequently reported information source types by major. Respondents from 7/10 majors reported using all five of the most frequently used source types (company information, industry standards, articles, marketing & industry reports, and laws and regulations) on the job. Respondents from all ten majors reported using articles, while 9/10 reported using company information and industry standards.

[Insert Figure 2 Here]

[Insert Table 3 Here]

Table 4 represents the support provided by employers for interns/co-op students to find information. 'Company intranet' and 'internet' were the most reported means of support. 'Proprietary databases/subscriptions' were reported by 10 respondents. One respondent, a supply chain undergraduate major who worked at as a procurement analyst at a global electronic

security company, reported using a 'Librarian/information specialist" and 'Library/information center'. 'Other' responses consisted of access to human resources, such as a supervisor or other expert, and shared company drives.

[Insert Table 4 Here]

Learn about Information Sources

We asked participants how they first learned to use an information source (Figure 3). 'Articles,' 'industry standards,' and 'company information' were reportedly taught most frequently by class instructors. Few respondents reported first learning to use information sources from librarians, however, it should be noted that at our university librarians are faculty who routinely teach or co-teach for-credit information courses in business management. Its possible students reported these instances as 'class instructors.' Learning about laws and regulation use was most frequently reported as an on-the-job experience, by a supervisor or other employee.

[Insert Figure 3 Here]

Perceived Difficulty in Finding Information Sources

For each information source selected, we asked participants how easy or difficult the source was to find. Figure 4 shows the results for the top five most frequently reported information sources. Overall, most respondents reported sources as 'extremely easy' or 'somewhat easy' to find. Respondents reported the most difficultly with 'marketing and industry reports' with 1/13 or 8% reporting the source as 'extremely difficult' to find, and 'laws and regulations' with 2/13 or 15% reporting the source as 'somewhat difficult' to find.

[Insert Figure 4]

Discussion

Our findings indicate that during business students' internship/co-op experiences they are required to perform information-related tasks and use a variety of information sources, but there are disconnects between their academic and workplace information experiences and environments. These differences are important for librarians and other educators to consider in developing business information literacy content.

Similar to Jeffryes & Lafferty's (2012) study of engineering co-op students, all respondents in our study reported performing at least one information-related task during their work experience. For the most part, the information tasks completed by our students match what we are teaching in academia and align with the Business Research Competencies (Reference and User Services Association, 2019). There does seem to be a disconnect with the information task of researching competitors and the information source of company research, as many more students identified using company information than reported researching competitors.

Another disconnect we found is that industry standards were reported as the second most frequently used information type and business students across all but one major reported using them in their co-op or internship. This supports the findings of Phillips et al. (2019) showing that skills in finding and using standards are needed by business students, but they are rarely taught in business undergraduate management curricula. While some students in our survey reported learning about standards from a class instructor, many others learned from a supervisor or other employee at their internship/co-op or on their own.

Likewise, laws and regulations were also highly used by students, but primarily students learned to find and use these either by a supervisor or another employee on the job or on their own. At Purdue University, business law is not required for most majors and additionally,

students who take the course do not necessarily learn how to find laws and regulations as part of their course work. Librarians are involved with some, but not all the business law courses taught, and information literacy is not a main objective of the course.

Our study found that most business students are using the internet and a company intranet to find information, with only 10 respondents reporting having access to proprietary databases/subscriptions. This is worth considering, since we spend much of our time in library instruction focusing on databases and other materials that are otherwise behind a paywall. While we all want our students to learn the best information sources to solve a problem or complete a task, the more realistic scenario is that they will not have access to the best resources and will have to forage among many far-from-perfect resources.

Similar to Jeffryes and Lafferty's (2012) results, only one student reported having access to a library/librarian. While this does not necessarily mean that the company at which the students worked did not have librarians, it does show that students in these positions are potentially not aware of librarian/information specialist existence in the workplace, or do not have access to them as an information resource/support. This highlights the need for information literacy instruction in academia, as students may not have the opportunity for this on the job in an internship or co-op. It also suggests that librarians and instructors should encourage students to proactively ask questions and examine their new information environments when they move to the workplace.

It is also interesting to see the change in book use since Jeffryes and Lafferty completed their study in 2012. At that time, 61% of engineering students reported using books as an information source. Our study found only 5% of respondents used books/ebooks. While this

difference could be due to the differing nature of the two disciplines, it is also likely that this is a reflection of the ways in which the information landscape has changed over the last decade.

Overall, respondents to our survey reported most information sources they needed to use were relatively easy to find. This finding aligns with previous information literacy related studies of undergraduate students (Jeffryes & Lafferty, 2012; Phillips, Fosmire, et al., 2019) and could be the result of an expert/novice effect (i.e., Kruger-Dunning (1999)), where beginners are overconfident due to their lack of experience and knowledge in a particular area.

Limitations
Our study has some limitations. First, our work was limited to a small number of participants at one institution. Additionally, thirty-three percent of our respondents were double majors and possibly not representative of a typical business student. We were also limited by self-selection bias with students who chose to complete the survey. Lastly, we did not collect data on the size and type of companies the students were employed at during their internships/co-ops. It's possible students at larger organizations had more information access and support.

Future Research
Future research is needed to investigate the ways in which students are foraging for information in their co-ops and internships. We believe the disconnect between the low number of students who report researching competitors and the high number who report using company information should be explored to better understand exactly how and what kinds of company information students are using. Are students using this information for a task we did not include in the survey? Additionally, we believe it would be useful to explore how students are interpreting information source types and their differences when nearly all of the information they encounter is digitally born, and much of it found on the internet.

Conclusion

All the respondents to our survey reported having to complete at least one information-related task during their workplace internship/co-op experience, with one-third reporting needing to accomplish three or more tasks. To accomplish these tasks, students in nearly all areas of business reported needing to use a variety of source types, some of which are not traditionally taught in an information literacy context during their time in academia (e.g., industry standards, laws & regulations). With this understanding, librarians are ideally situated to create information literacy learning experiences to integrate these sources into curricular and co-curricular activities for business students.

Declaration of Interest Statement

There are no competing interests to declare.

References

Conley, T. M., & Gil, E. L. (2011). Information literacy for undergraduate business students: Examining value, relevancy, and implications for the new century. *Journal of Business & Finance Librarianship*, *16*(3), 213–228. https://doi.org/10.1080/08963568.2011.581562

Gilbert, S. (2017). Information literacy skills in the workplace: Examining early career advertising professionals. *Journal of Business & Finance Librarianship*, *22*(2), 111–134. https://doi.org/10.1080/08963568.2016.1258938

Howard, H. A., Wood, N., & Stonebraker, I. (2018). Mapping information literacy using the Business Research Competencies. *Reference Services Review*, *46*(4), Article 4. https://doi.org/10.1108/RSR-12-2017-0048

Jeffryes, J., & Lafferty, M. (2012). Gauging workplace readiness: Assessing the information needs of engineering co-op students. *Issues in Science and Technology Librarianship*, *69*(69). https://doi.org/10.5062/F4X34VDR

Jewell, P., Reading, J., Clarke, M., & Kippist, L. (2020). Information skills for business acumen and employability: A competitive advantage for graduates in Western Sydney. *Journal of Education for Business*, *95*(2), 88–105. https://doi.org/10.1080/08832323.2019.1610346

Klusek, L., & Bornstein, J. (2006). Information literacy skills for business careers. *Journal of Business & Finance Librarianship*, *11*(4), 3–21. https://doi.org/10.1300/J109v11n04_02

Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, *77*(6), 1121.

Lloyd, A. (2010). Framing information literacy as information practice: Site ontology and

    practice theory. *Journal of Documentation*, *66*(2), 245–258.

    https://doi.org/10.1108/00220411011023643

Phillips, M., Fosmire, M., Turner, L., Petersheim, K., & Lu, J. (2019). Comparing the

    information needs and experiences of undergraduate students and practicing engineers.

    The Journal of Academic Librarianship, *45*(1), 39–49.

    https://doi.org/10.1016/j.acalib.2018.12.004

Phillips, M., Howard, H., & Brewster, G. (2021). *Survey Protocols to Examine Business*

    Students' Workplace Information Use During Internships and Co-ops.

    https://docs.lib.purdue.edu/lib_fscm/35

Phillips, M., Howard, H., Vaaler, A., & Hubbard, D. E. (2019). Mapping industry standards and

    integration opportunities in business management curricula. *Journal of Business &*

    Finance Librarianship, *24*(1–2), 17–29. https://doi.org/10.1080/08963568.2019.1638662

Pirolli, P., & Card, S. (1999). Information foraging. *Psychological Review*, *106*(4), 643–675.

    https://doi.org/10.1037/0033-295X.106.4.643

Reference and User Services Association. (2019). *Business research competencies* [Text].

    https://www.ala.org/rusa/guidelines/business-research-competencies

Sandstrom, P. E. (1994). An optimal foraging approach to information seeking and use. *The*

    Library Quarterly: Information, Community, Policy, *64*(4), 414–449.

Sokoloff, J. (2012). Information literacy in the workplace: Employer expectations. *Journal of*

    Business & Finance Librarianship, *17*(1), 1–17.

    https://doi.org/10.1080/08963568.2011.603989

Table 1: Respondent Demographic Data

Current Classification	# of Respondents	Male	Female
Sophomore	4	3	1
Junior	8	5	3
Senior	22	7	15
Masters	3	1	2
Alumni	2	1	1
Total	39	17	22

Table 2: Student Major(s) (n=39 responses; 13 respondents selected multiple majors)

Major	# of Respondents
Accounting	10
Supply Chain	9
Finance	8
Integrated Business (IB) & Engineering	6
Marketing	6
Management	5
Other: Non-Business*	3
Economics	2
MS/MBA	2
MS Human Resource Management (HRM)	1

*Non-business included respondents with double majors in a business area and a non-business area (Spanish, communication, or computer science).

Table 3: Five Most Frequently Used Information Source Types by Major (n=39 responses; 13 respondents selected multiple majors)

Major	#	Company information	Industry standards	Articles	Market & industry research reports	Laws & regulations
Accounting	10	8	6	2	1	6
Supply Chain	9	6	3	2	5	1
Finance	8	6	4	2	4	2
IB & Engineering	6	4	3	2	0	1
Marketing	6	6	1	2	1	2
Management	5	3	1	4	2	2
Non-business*	3	2	1	3	1	1
Economics	2	2	1	1	2	0
MS/MBA	2	2	1	1	2	1
MS HRM	1	0	0	1	0	0

*Non-business included respondents with double majors in a business area and a non-business area (Spanish, communication, or computer science).
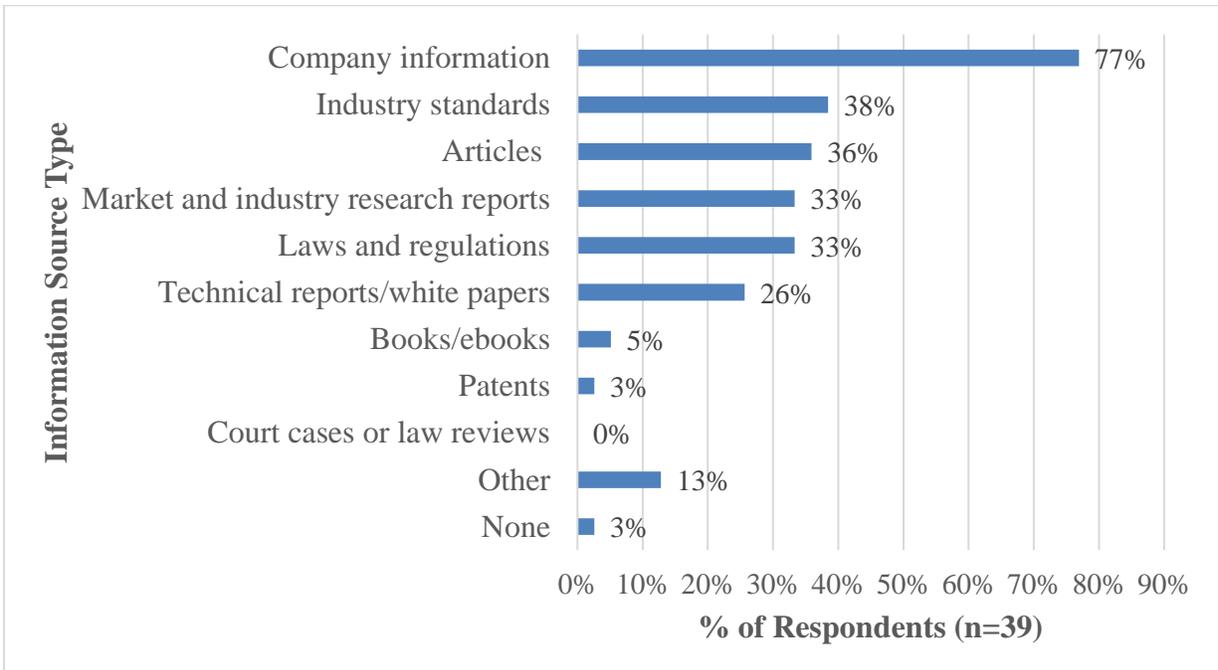
Table 4. Support Provided by Employer for Finding Information (n=39 respondents, multiple selections permitted)

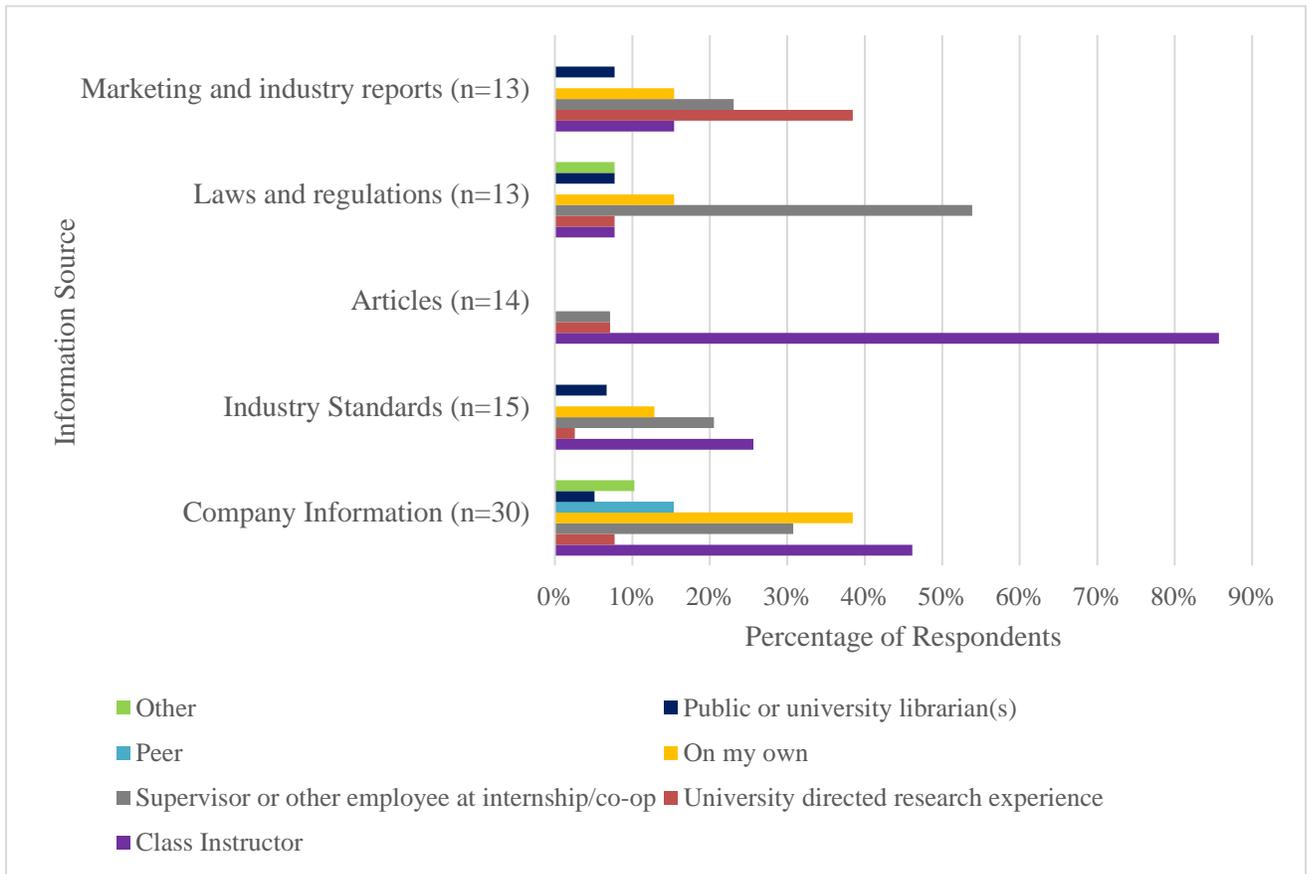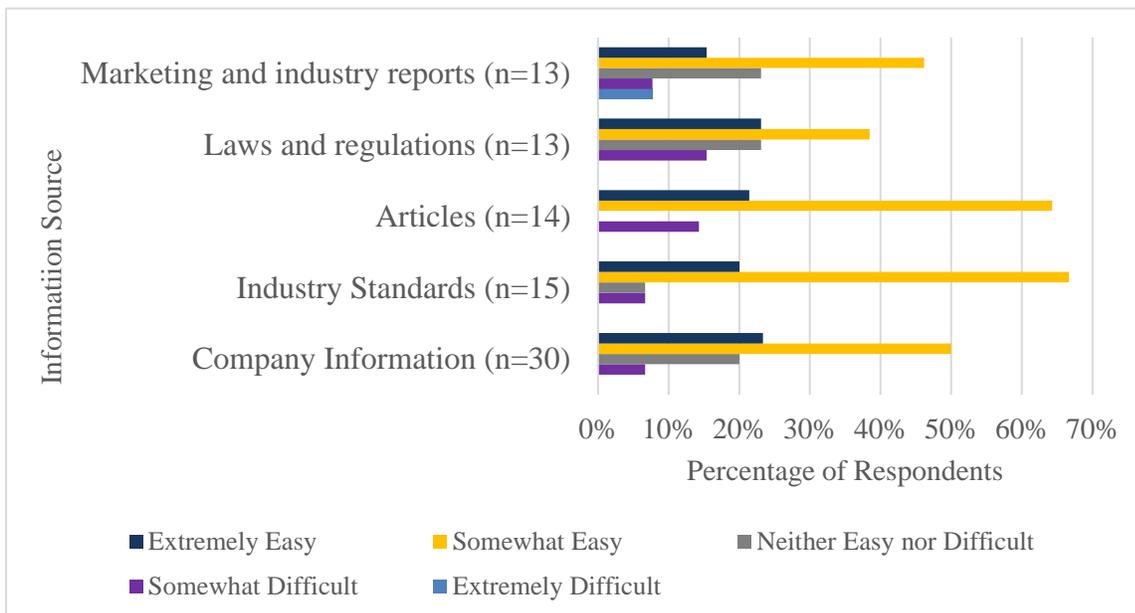| Support/Resource	# Responses
Company Intranet	27
Internet	36
Proprietary databases/subscriptions	10
Librarian/information specialist	1
Library/information center	1
Other	3
None	1

Figure 1
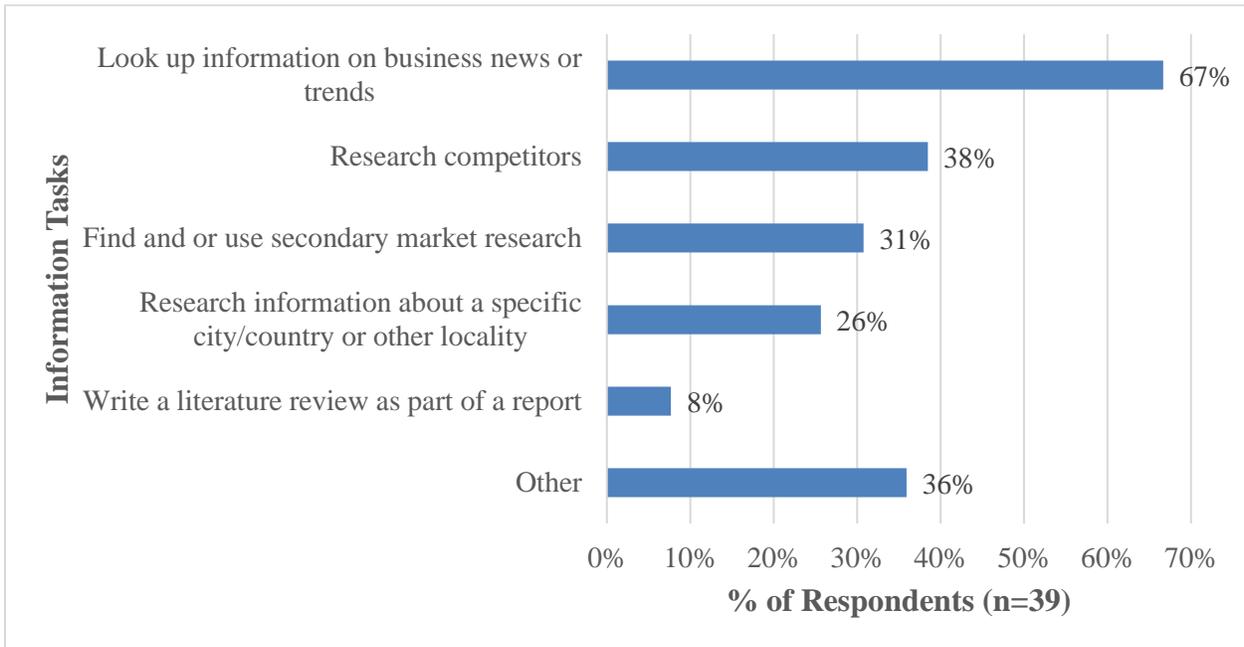
Figure 2

Figure 3

Figure 4

Figure Captions

Figure 1**:** *Information Task(s) Completed During Business Student Internship/Co-op Experiences*

Figure 2: *Information Source Type(s) Used During Business Student Internship/Co-op Experiences*

Figure 3: *How Respondents were First Taught to Use the Top Five Information Sources (n=39 respondents, multiple selections permitted)*

Figure 4: *Perceived Difficulty in Finding the Top Five Information Sources Needed During Internship/Co-op Experience (n=39 respondents, multiple selections permitted)*