Identifying Microsoft Excel® Skills Important for Business School Graduates

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Abstract

Approximately 40-50% of employer job postings for Bachelors of Science in Business Administration (BSBA) new college graduates reference proficiency or advanced skills with Microsoft Excel skills. This study summarizes a multiyear exploratory research effort to better understand the specific Excel® skill levels expected of employers and the importance of these skills in the employment process. Data was gathered from advisory boards, employer surveys, recruiters, job posting services, students returning from internships and student course feedback. Specific Microsoft Excel® skills that enhance business student success in internships and full-time employment opportunities are identified.

Keywords: Microsoft Excel®, analytics, job opportunities, internships

1. INTRODUCTION

The first issue to address is to what extent business school Bachelors of Science in Business Administration (BSBA) programs should consider Microsoft Excel® skills as part of their educational scope. What is the purpose of a college education? Gerstein and Friedman (2016) point out that the answer to this question has varied over the years and still varies greatly today in different institutions. Should the Bachelor of Science in Business Administration (BSBA) curriculum focus predominantly on theory, concepts, critical thinking and knowledge? How much effort should be spent on skills development? With greater intensity employers are demanding skills and competencies that ensure students are productive and resilient in life

in spite of the high degree of change being experienced in many professional fields. Barrett (2015) quotes Ronald Reagan in 1967 who said "we can no longer afford intellectual luxuries in universities." His point was that that education should create productive and economically sustainable members of society, implying that knowledge alone without skills is incomplete education. Over 80% of freshmen entering college say that the purpose of education is to get a good paying job and businesses are demanding basic skills beyond traditional topical knowledge in the employment process (Barrett, 2015). Freidman and Friedman (2015) make a compelling case that institutions must stress and teach skills that help students be successful and survive and thrive in the new knowledge economy. This paper summarizes exploratory

research collected over a multiyear period aimed at identifying specific Microsoft Excel® skills important for BSBA graduates to have at graduation. The authors acknowledge the differences of opinion, some strong, on the subject, but take the position that importance of Microsoft Excel® skills is significant to employers and affects opportunities for BSBA graduates whether or not one agrees that it is the role of the business school curriculum to address it. Another question that may be asked is whether it should be the student's responsibility to learn these skills independently thus demonstrating the initiative to bridge the gap between traditional education and the needs of the workplace. Regardless of where educators feel the responsibility lies, employers are placing increasing importance on these skills at graduation.

The need for graduates to start jobs with sound functional analytical skills, e.g. proficiency with Microsoft Excel®, is therefore becoming more of a prerequisite for employment. A white paper study commissioned by Microsoft and released by IDC, October 2013, reported that the top two skills cited in over 14 million job postings for the top 60 job growth occupations of the economy were oral and written communications and Microsoft Office skills. Microsoft Excel® was cited as the most ubiquitous analytics tool in business. Geiger (2015) reported on a study finding that 78% of middle-skilled jobs require digital skills like Excel®. Middle-skilled jobs are fast growing job categories that place more emphasis on skills than on the having a bachelor degree, and in many cases pay more than traditional jobs requiring the bachelor degree alone. These jobs require significant business understanding, but with the added emphasis on skills to apply quantitative business intelligence to decision making. Some could argue that business graduates should aspire to more senior management positions, but it is more appropriate to consider these middle-skilled positions as part of an accelerated path for business graduates into management. The business education, coupled with the analytical skills with tools like Microsoft Excel®, place the business graduates in a highly favored position for future leadership. Business school graduates are therefore often in competition for these higher paying jobs and the skills proficiency makes the difference in the hiring selection (Geiger, 2015). Soergel (2015) reports additional details on the middle-skill job study which concluded that salaries are 13-38% higher based on the analytical tools skills a candidate has when interviewed. Soergel concludes with the following quote from the study, "Jobs requiring advanced analytical tools skills offer the strongest opportunity for middle-skill job seekers in terms of salary and growth as well as career advancement. Effectively, entire segments of the U.S. economy are off-limits to people who don't have basic analytical skills." Thus new BSBA graduates need to have these analytical skills to compete for these higher paying middle-skilled jobs.

There also appears to be a shift in hiring criteria such that skills are gaining in importance, and degree, school name, and GPA are dropping in importance, (The Role of Higher Education, 2012). This message was also reinforced at the Association to Advance Collegiate Schools of Business (AACSB) workshop "Co-Lab Connecting Business Schools with Practice" in June 2016. In the session "Recruitment, Retention, and Engagement" panel speakers commented that talent acquisition was the #1 issue with many companies today and candidates with cyber and analytics skills and competencies were drawing significantly higher salary offers. Many companies are also establishing baseline quantitative assessment tests at part of the screening and interview process to ensure essential skills and competencies are present before hiring.

In the broader context of business analytics and big data trends, Microsoft Excel® is still the "ubiquitous and popular choice" for data analysts, (Dumbill, 2012). Madhu Reddy, Senior Product Planner for Microsoft Big Data, stated that the interoperability Excel® with other BI and big data systems and applications is an obvious high priority in Microsoft, (Dumbill, 2012). In many cases, analytical skills are becoming more important in the employment decision than whether or not a candidate has a bachelor degree. A search for what specific Microsoft Excel® skills are important to employers will find a number of very general suggested lists such as Sravani (2016) but very few of these sources specifically address the needs of business school graduates.

At our university, by 2012, business advisory board members and recruiters were consistently saying that business students and graduates need stronger Microsoft Excel® skills. In response to their feedback, an exploratory research effort was begun to identify specific Microsoft Excel® skill levels expected of employers and the importance of these skills in the employment process. Ultimately, the goal of this research was to identify specific Excel® skills that could be incorporated into a business curriculum to enhance graduates' success.

2. METHODOLOGY AND RESULTS

By, definition, exploratory research often relies on collecting and analyzing data and information in a variety of ways from disparate primary and secondary sources, (Shields & Rangarajan, 2013). Data was gathered through focused discussions in advisory board meetings and discussions with employers, recruiters, and students returning from internships. More quantitative data was also collected from Monster.com, employer surveys and student course feedback. Specific Microsoft Excel® skills that enhance business student success in internships and full-time employment opportunities identified. Though exploratory research is generally only useful in gaining understanding of a phenomenon of interest and not direct problem solving, the feedback from these activities was consistent enough to allow creation of a recommended set of analytical and Excel® skills that would enhance graduates' success.

Advisory Board Meetings – Evaluating the Need

In 2012-2013, discussion items were included on the agendas in advisory board meetings at the dean's and several department levels. The question asked was open ended Describe the types of analytical tasks assigned and Microsoft Excel® skills expected of new BSBA graduates. Member of these board were all managers and though the feedback was consistent, it was not as detailed or specific as desired. However, the conclusion was clear: more advanced Excel® skills are desired of both business student interns and graduates. The descriptions of analytical tasks were a little more specific with descriptions like inventory management, scheduling, financial and account analysis, performance analysis and metrics creation. These discussions clearly validated the need identified earlier through the spontaneous feedback from advisors and recruiters.

Job Posting Study

Following these discussions, a study of entry level, bachelor degree, business jobs in Monster.com was made using the available search tools. A comparison was made in six states of all jobs meeting the criteria and all jobs meeting the same criteria but also calling for Microsoft Excel® skills. The results are shown in Table 1. There was surprising consistency of the results across several regions of the U.S. In the body of the job descriptions, the most frequent terminology used by the employers was advanced Excel® skills or proficiency in Excel®. These results are based on a generic BSBA search.

State	% Requiring Excel®
North Carolina	43.48%
Virginia	51.43%
Georgia	44.53%
South Carolina	46.15%
California	51.44%
New York	51.03%

Table 1. Monster.com Results

This element of the exploratory research confirmed that the feedback we received from our advisors and employers was not specific to our BSBA programs, but a more universal issue. Though the majority of our graduates fill positions in the Southeast U.S., this element of the study suggests that the desires of employers are relatively consistent across the U.S.

Employer Survey

As part of a larger 2013-2014 survey of 107 advisory board members and employer managers, two seven point Likert scale statements were presented. The first was "Data analytics (quantitative tools to analyze business data to support decision making) is a very important skill for students." Overall 94% agreed or strongly agreed with this statement; 67% strongly agreed; 27% agreed and none disagreed with the statement. The second statement was "Being able to create spreadsheets, charts and graphs and analyze data with Excel® are very important skills that students need when they graduate." Overall 96% strongly agreed or agreed; 77% strongly agreed; 19% agreed, and none disagreed.

The conclusion from these initial three exploratory activities was that the need for stronger Excel® skills was very significant and warranted more detailed investigation into the specific skills needed or expected by employers.

Identifying Specific Excel® Skills

In 2013-2014, at the end of each summer, students returning from summer internships and entering into their senior year of study were invited to a "debrief" session to discuss what the school could to better to prepare them for success in their internships. They were asked to describe their specific work assignments and what analytical tools they used. Without exception, all

of the interns reported that they spent a significant portion of their time working in Excel® using Pivot Tables and a variety of other functions and spreadsheet operations. There was a wide diversity of business disciplines being performed but Excel® was the common tool used to support all of the reported assignments, and interestingly pivot tables were used more than any other tool within Excel®.

Creating and Piloting a Learning Experience
In 2014-2015, additional web research was conducted in an effort to identify specific Excel® skills that would be of greatest benefit for BSBA students to have after their junior year in support of internships and at graduation. Though many reports of the need for Excel® skills were found on websites, very few details identifying specific skills were found, except in a few topical areas such as accounting and operational research.

Using data gathered from students returning from summer internships as a starting point, two major employers in the area were contacted to gather more specific information about the skills required and the types of business applications new graduates are likely to be challenged with. Based on past hiring experiences with these two employers, it was felt that if the graduate skill levels met their expectations, then they would likely be acceptable for most of the other employers. One of these employers utilizes an Excel® test in the new college graduate interview process. The other employer asks detailed questions about specific Excel® skills during the interview. In addition, several visits (approximately 16 hours total) were made in 2015 to both company locations to talk to work teams and hiring managers about specific day-to-day activities requiring Excel® and the desired level of skills for new college graduates in their businesses. A specific list of skills was developed from all of the input received.

Several of the more vocal advisory board members from the earlier 2012-2013 meetings were asked to comment on the list, and they confirmed that the initial identification of specific skills was a good starting point. The list of specific skills is in Table 2.

To further evaluate the interests and abilities related to Excel® skills from the students' perspective, a special topics class, 3000 level, was designed and offered in Spring semester 2016. Enrollment reached capacity with about 40% junior level and 60% senior level students. The course incorporated use of these specific skills in twelve case-based business problem solving assignments.

1	Absolute, relative and mixed addressing in functions and formula and between worksheets
2	Pivot tables and charts
3	Scenario Manager (alternative analyses)
4	Solver (optimization)
5	Goal Seek
6	Performing Access queries
7	Importing text and other types of data files and queries from Access into Excel®
8	Evaluating and cleaning dirty data
9	Data entry validation tools, using drop down menus, instruction and error messages, comments, and comparison of data entries to expected ranges
10	Creating Dashboards and KPIs with multiple pivot charts synchronized
11	Creating Slicers and Timelines also synchronized
12	Linking Slicers and Timelines to multiple Pivot tables
13	Vlookup and Hlookup, comparing lists
14	Sumproduct, Sumif, Averageif, Countif
16	Nested if's
17	Nested functions
18	Index
19	Time and date calculations
20	Switching between range data and table data and using table functions including
21	Using filters, including custom text filters, in tables for content analysis

Table 2. Specific Excel® Skills

Data from real constituent businesses, the U.S. Census Bureau, and a variety of internet sources were used. In addition, Monk, Brady, and Cook (2014) was used as a support text in some case

assignments. Objectives of the course included understanding common real-world business problems and how Excel® can be used to support better business decisions. Two industry speakers were also brought in as guest lecturers to discuss real-world day-to-day data challenges and the analytics needed to make better business decisions.

Student Feedback
Towards the end of the course the students completed a survey asking them a number of questions about the perceived value of the different Excel® topics and case based exercises in the course. Almost all topics received the highest rating of "Very important." In the qualitative section of the survey, the most favorable comments related to the extensive practice with Pivot Tables and Charts including all of the various options for sorting, filtering and grouping. Topics related to time and date functions and "Index" only received "Important" ratings, which were the lowest ratings of the topics covered. All students felt that a course, like the one they completed, based on experiential case-based learning and incorporating Excel® skills development would be extremely helpful in preparing future students for summer internships and fulltime employment.

The Investigative Course Project
In addition to the business cases and skill development sessions, the students were also assigned an investigative project to interview management in a real business they have access to "to better understand the common daily analytical needs of businesses today and the analytical capabilities and desired skills of professionals in their organizations from new college graduates through first level managers." In many cases, the students interviewed employers, working parents or other relatives and friends. At the end of the semester students presented their findings in project reports before the class. The project guidelines are provided in the Appendix.

The range of firm sizes was from very small firms such as family owned restaurants to very large global corporations. In the presentations of the student findings, there was an apparent pattern of maturity in the use of Excel® skills in business processes and decision making. Two of the smallest firms were still tracking all costs and orders manually and had no data entered into computers, but were very interested in the students' suggestions for how to facilitate operations with Excel®. Other small companies

tended to use Excel® for very basic operational functions like setting up employee schedules and tracking hours worked. The next level of utilization included inventory tracking and management and basic accounting functions such as cost tracking of receipts and expenses. More mature, slightly larger firms were using the available information and data histories to do forecasting of labor and inventory needs. The next level of maturity seemed to be the integration of data from multiple departments into single spreadsheets for enhanced forecasting and performance tracking. Next, there were activities aimed at analyzing opportunities to improve performance metrics such as throughput, order cycle time, increased capacity, etc. Lastly, analyses were being performed to assess specific customer service metrics and utilizing customer system data to find ways to improve customer satisfaction. The students found that even in largest companies which utilized packaged enterprise systems and cloud data warehouses, employees from senior managers down were continually querying selected subsets of data and using Excel® to analyze scenarios to answer specific business questions.

In the project reports, perhaps the biggest or most significant revelation that the students consistently reported was that almost all businesses have a lot of data and there was great potential to use it to make better business decisions, but due to lack of skills and time, they were not effectively using what they had or doing everything they wanted to do. Essentially all of the businesses interviewed stated that they wish that they had new college hires or skilled employees who could help them make smarter business decisions analyzing the data they have.

Several anecdotal reports were also very interesting. One large Fortune 50 company interviewed said that Excel® was so important and necessary for daily performance of duties that they were giving all business school graduates an Excel® test as part of the interview and using the test as a screening tool. Students with excellent academic credentials who could not pass the Excel® test were eliminated from consideration and much more consideration was given to students who passed the test and could "hit the ground running" contributing to the business needs with minimal initial training.

Another large multinational manufacturing company reported that they had a policy of paying premium pay, up to 25% more, for

student interns who had high levels of Excel® skills and placed them high in ranking as potential full time employees after they demonstrated their skills during the internship.

At the end of the special topics course, the course outline, learning objectives and some of the results were reviewed with one of the hiring managers who provided input in the course design. The response was that students who graduate with these skills would likely be placed close to the top of candidate list for consideration.

3. FUTURE RESEARCH

The elements of this exploratory research involved a variety of data sources and both quantitative and qualitative investigation. The results supported a successful pilot course design and student and employer feedback was positive. However, there are two recommendations for future research. Based on the activities to date, more comprehensive survey of a broader cross-section of employers is desired with a possible investigative look at commonalities and differences in specific skills and tasks of greatest importance to each major, e.g. accounting, finance, management, marketing, computer information systems, economics, etc. For example, there is evidence that accounting and finance majors may need a slightly different skill set than other majors. Ideally, curriculum changes could incorporate common skills in earlier core courses and more advance major courses could incorporate major specific skills.

The second recommendation for future research would be to expand on the task specific investigative project to better understand the market needs and opportunities of employers recruiting the BSBA students. As described in the course investigative project section, there appears to be some significant patterns of analytics maturity in companies of varying sizes and demographics. Understanding these maturity differences and potential opportunities in employers' capabilities my significantly inform the types of case-based assignments appropriate for future classes.

4. CONCLUSIONS

This paper summarizes seven exploratory research activities aimed at supporting curriculum decisions that would better prepare BSBA students to meet employer expectations relative to Microsoft Excel® skills. The first three elements of this exploratory research, advisory board meeting discussions, a job posting study and an employer survey validated a very real need for BSBA students to have stronger Excel® skills. The job posting study suggests that this need is widespread and potentially a national need.

The internship interviews, pilot course experience including employer feedback, and end of course student survey feedback suggest validity of the initial set of specific skills needed.

The investigative course project suggests that the needs and opportunities for Excel® based analytical skills is pervasive in businesses of all sizes and ubiquitous in business. Reports in literature also find that advanced analytical skills, Excel® in particular, results in increased marketability and compensation.

Though this is an exploratory study, and additional research is recommended, the results appear quite significant. It is recommended that each institution evaluate the issues presented here with their respective constituency and the effects these issues have on their graduates' competitive marketability and institute appropriate curriculum enhancements.

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APPENDIX

Excel® Interview Project Guidelines

Identify a company, or work group within a company, where you can interview one or more employees, preferably a manager. You might consider a company where you have worked part-time, interned, or where friends or family members work or have worked. It would be very helpful for you to have some level of understanding of the daily operations and the measures of business performance deemed important by the organization. If you can't readily identify a company, let me help you, or you can try to "cold call" a company and see if they would be willing to talk to you for a few minutes and give you an interview for a student project.

For the interview, please explain that you are a student in an advanced Excel® business analysis class and that you are seeking to better understand the common daily analytical needs of businesses today and the analytical capabilities and desired skills of professionals in their organizations from new college graduates through first level managers.

Before the interview begins let them know the following background information:

1. You will report your findings in a student project report and presentation to your class.
2. Generic aspects of the findings, may be aggregated with feedback from other companies, and used in university studies and research supporting curriculum enhancement decisions, but with no company or individual names mentioned.
3. Anything shared in the interview that they do not wish to be included in the report, will be omitted.
   If they agree to the interview after they understand how the information will be used, then ask them to share some basic demographic information about their business:

1. Approximate Size- number of employees at this location
2. Industry type- Retail, distribution, manufacturing, logistics services, financial services, etc.
3. Primary product or service
4. Primary customer market served
   If, after the interview, they ask your opinion of what more can and should they be doing, you may offer to take back the interview information and then schedule a second appointment to discuss some possible options based on things you are learning in class. I would be glad to meet with you and help you develop return feedback. Being able to offer specific advice on how they might improve some aspect of their business, could be a big plus on a resume` and give you a great topic for discussion in job interviews.

   Interview questions:

   Focusing on daily business decisions typically made by professionals in your firm, from new college hires to first level managers:
1. What data analyses do you routinely do to help you make business decisions?
a. Can you describe some examples?
2. What analytical software tools do you use?
3. How do you routinely use MS Excel® in your current work?
a. Can you describe some examples?
4. What data do you, or your company, routinely collect to support analyses? What formats are these data in, e.g. hard copy files of paper forms, spreadsheets like Excel®, database management system like MS Access, etc.?
5. What additional analyses would you like to have or be able to do routinely to better support your business? What new data is needed?
a. Can you describe some examples?
6. What analytical skills do you wish new college graduates were stronger in?
a. Can you describe some examples?

Following the interview(s), prepare a short report, approximately 2,000 words. The report should include five sections. During the class time, last week of classes, each student will be asked to summarize, in 3-5 minutes max, what was learned in the interview(s).

<u>Five Sections</u>

Interview questions 1, 2, and 3 support sections 2 and 3. Question 4 supports section 4. Questions 5 and 6 support section 5.

1. Introduction and demographics: include the name and location of the company, persons interviewed, size of the location/company, and brief description of the mission of their business.
2. Current capabilities and practices using Excel®, Access, and/or similar tools for data management and analysis.
3. Types of business decisions supported by these analyses
4. Current data available and format in collection.
5. Additional analyses needed to better support business decisions, and desired level of analytical skills needed by new college graduates.