SKILLS REQUIRED OF BUSINESS GRADUATES: EVIDENCE FROM UNDERGRADUATE ALUMNI AND EMPLOYERS

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ABSTRACT

The results presented in this paper are the responses from 163 undergraduate business alumni of a target school and 45 New Jersey employers to questions to identify the writing, quantitative, and computer skills required at work. The questions were adapted from Western Carolina University's Business Alumni survey. The results of the survey showed strong correlations with the writing tasks (r=0.989), quantitative tasks (r=0.942), and computer software (r=0.972) identified by both the alumni and the employers as being tasks required at work. E-mail, business letters, and memos were the most common written communication required at work. Budgeting, financial accounting, project management, and forecasting were most common quantitative skills required Word processing, spreadsheets, email, and world wide web were most common computer applications used. Based on these results the target school should consider modifying courses within the curriculum so that graduates have these competencies in the writing tasks, quantitative skills, and computer software identified as being required at work by the majority of alumni and employers surveyed.

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INTRODUCTION

Since formation of the Secretary of Education's Commission on the Future of Higher Education in 2005, a national effort has been underway to hold higher education institutions accountable for the preparation of college students to meet the economic and workforce needs of the country (Bisoux, 2008; U.S. Department of Education, 2005). External stakeholders that fund and grant accreditation to colleges have raised accountability issues related to the preparation of college students for jobs that are aligned with the needs of the 21st century.

Often, the issue of accountability in higher education is raised by regional accreditation bodies. As a result, accrediting agencies become both promoters and evaluators of assessment processes (Lubinescu, Ratcliff, & Gaggney, 2001). External stakeholders, such as accrediting agencies and legislators, have cautioned college faculty members that completion of graduation requirements does not necessarily indicate that students have mastered the course content and are prepared to enter the workforce with the necessary knowledge and hands-on skills (AACU, 2008; Dessoff, 2006; Lederman, 2006). As part of the regional accreditation process, as well as for the accreditation process of the Association to Advance Collegiate Schools of Business (AACSB), faculty at colleges and universities periodically review the courses and curricula to ensure that the content is aligned with the needs of the external stakeholders. For AACSB accreditation, faculty are required to assess the learning outcomes of graduates to assure that the graduates have the requisite skills and competencies. These assurances of student learning in AACSB often require feedback from alumni and employers in identifying what skills, and competencies need to be measured to assure that business graduates are prepared for the workplace (Carraher, 2009).

The setting for this study took place at a 4-year public liberal arts college within the New Jersey system of higher education. The targeted college is primarily an undergraduate institution of liberal arts, sciences and professional studies. During the Fall 2007 semester enrollment was 6,766 undergraduates. The targeted college has 256 faculty and is fully accredited by the Middle States Commission on Higher Education (MSCHE), a regional accrediting association. There are 39 undergraduate programs, 8 master's programs, and 1 doctoral program.

In 2004 the business faculty at the targeted college voted to begin the process for initial accreditation by the AACSB. In 2007, the business faculty instituted an assessment committee within the School of Business to develop a methodology to assess student learning in the core courses of the business programs and to begin to tie the student learning outcomes to the AACSB Assurances of Learning. As part of this process, faculty in each of the major tracks (e.g., management, marketing, international business, finance, and accounting) identified where the demonstrable business skills and competencies, as identified from the AACSB assurances of learning, could be measured in the core business courses. To determine specifically what needs to be assessed in the courses, feedback from alumni and employers must be in place to ascertain which workplace skills and competencies should be measured.

AACSB accredited universities and colleges often amass institutional research on follow-up studies of alumni and employers. This study at the targeted college established the first reporting of collective data derived from follow-up studies of alumni and employers of graduates. In focusing the study, an emphasis was placed on the skills and competencies that were needed in the areas of writing, quantitative, and computer software skills. Feedback from business alumni and employers is instrumental to those faculty who choose to revise their course content and to develop assessment instruments.

The purpose of this project was to answer the following research questions: (1) what writing tasks are required at work? (2) which quantitative skills are required at work? and, (3) which computer software is required at work? These questions were adapted from the Business Alumni survey of Western Carolina University; permission was granted from Western Carolina University to use their questions. The results presented are the responses from 163 undergraduate business alumni of a target school and 45 New Jersey employers to the questions. This feedback helped guide revisions to courses within the business curricula of the target college to ensure relevancy to the needs of the business community; this feedback will provide direction for future revisions in business courses and curricula. The data is instrumental in developing program and student outcome measures necessary for MSCHE and AACSB accreditation.

This paper presents a literature review of the accountability movement in higher education, the adoption of assurance of student learning, and the incorporation of total quality management (TQM) in higher education. The analysis of data is presented along with recommendations for further research.

LITERATURE REVIEW

Since the mid-1980s, with the publication of the *Nation at Risk* (U. S. Department of Education's National Commission on Excellence in Education, 1983), policymakers and accreditation agencies have labeled the disparity between the needs of the workplace and the skills of the new workers as an emergency (Hartenian, Schellenger & Frederickson, 2001; Van Horn, 1995). External stakeholders questioned higher education leaders about pedagogical techniques, curricular coherence, and lack of focus on student outcomes. In response to these demands from external stakeholders, such as accrediting bodies and legislators, higher education faculty began to reexamine curricula, student outcomes, and the link between college courses and skills needed in the workplace. Roberson, Carnes, and Vice (2002), as well as Jones (2002), stated that measurement of the professional skills of students have often been neglected or has been inadequately measured. Often in business programs neither professional skills nor applied knowledge competencies have received adequate attention.

In the mid-1990s, as part of the drive for accountability, external stakeholders wanted the faculty of the colleges to reevaluate their assumptions that students had learned course content through completion of their program of studies and were prepared to enter the workforce with the necessary knowledge and hands-on skills (Middle States Commission on Higher Education, 2003). From the mid-1990s to the present, policymakers and accreditation agencies continue to focus on outcomes assessment of student knowledge and focus on faculty accountability regarding student outcomes in skills areas of the professional programs. With the formation of the Secretary of Education's Commission on the Future of Higher Education, a national effort was organized to hold higher education institutions accountable for the preparation of college students for jobs that meet the economic and workforce needs of the future (U.S. Department of Education, 2005). Accountability issues raised by the commission focus on the need for graduates to receive academic preparation that is aligned with the employment needs of the 21st century. Accrediting agencies and faculty at colleges are encouraged to provide assessments that indicate students leave college with the skills they need to be productive workers and citizens (Lederman, 2006; Quevedo, 2007; Yankelovich, 2005). Specifically in business programs, faculty should reexamine their curricula, including the important skills that college graduates need to be more effective in the changing workplace (Lederman, 2007; Dessoff, 2006).

In 2008, the Association of American Colleges and Universities (AACU) presented research findings on the views of employers regarding assessment approaches used in institutions of higher education. Issues of access, affordability, and accountability as well as what contemporary college graduates need to know and be able to do when they enter the workplace were addressed. Educators and employers reached a consensus about the learning and skill sets American workers need from their college experience and recommended that presidents, trustees, school leaders, and employers work together to build public understanding of what knowledge and skills matter in a 21st-century college education. These stakeholders should champion and support essential learning outcomes in content and skill areas that college graduates need as they enter the workplace (AACU, 2008).

The following summarizes the skills that the AACU (2008) found the majority of employers would like colleges and universities to emphasize more when preparing graduates for the global economy and workplace: (a) concepts and new developments in science and technology; (b) teamwork skills and the ability to collaborate with others in diverse group settings; (c) application of knowledge and skills to real-world settings through internships or other hands-on experiences; (d) communication skills, both oral and written; (e) critical-thinking and analytical-reasoning skills; (f) global issues and developments and their implications for the future; (g) the ability to locate, organize, and evaluate information from multiple sources; (h) innovative and creative thinking; (i) the ability to solve complex problems; (j) the ability to work with numbers and understand statistics; (k) an understanding of the role of the United States in the world; (l) a sense of integrity and ethics; and, (m) an understanding of cultural values and traditions in America and other countries.

In the process of assessing the learning outcomes of graduates, including the skills and competencies needed for the workplace, there are similarities between outcomes-based education, which identifies outcomes for graduates and emphasizes quality in education, and the TQM approach used in business and industry. For example, both outcomes-based education and the TQM approach focus on the needs of customers and high-quality results (Aaker, 1995; de Jager & Nieuwenhuis, 2005). As part of the TQM movement, the concept of benchmarking has become integrated into the operation of organizations and corporations. Benchmarking requires a company to monitor the external environment and identify new ways to improve processes and meet customer expectations (de Jager & Nieuwenhuis, 2005; Stroud, 2009). TQM and accountability efforts focus on meeting the needs of the marketplace, establishing measurable standards and benchmarks, and providing evidence of student learning.

In higher education, accreditation bodies set standards and call for proof of adherence to those standards (Academic Quality Improvement Program, 2005). For example, the AACSB's (2006) accreditation standards require business programs to provide assurances of learning to external stakeholders and the students who are the consumers of academic programs. To comply with the AACSB's assurances of learning standards, business school faculty must develop, monitor, evaluate, and revise the substance and delivery of curricula and assess the impact of curricula on learners. This curriculum management process necessitates input from faculty, staff, administrators, students, alumni, and members of the business community. To demonstrate accountability, college faculty are incorporating TQM approaches in their strategic planning, assessment of student outcomes, and curriculum development (Wessel, 2007).

In summary, the major reports by task forces, commissions, and accrediting bodies reviewed by the researcher expressed concern about the quality of undergraduate student learning related to skills that are needed in the workplace. In their undergraduate education, students should develop the necessary skills, abilities, attitudes, and values that are essential to success in the complex business world. Faculty in higher education must address the diverse demands placed on graduates rather than concentrate on narrowly focused, job-specific technical skills. If higher education is to provide graduates with the knowledge and skills they need in the workplace of the 2lst century, curricula must change to reflect the dynamic needs of business (AACU, 2008; RAND, 2004).

METHODOLOGY

A survey packet was mailed during April/May 2008 to 2383 alumni and 145 employers of the target college that explained the study, provided information on informed consent for participation in the study and presented the questions for the study. The questions asked respondents what specific writing tasks they are expected to complete such as e-mail, business letters, memos, proposals, training guides, research reports, sales letters, promotional materials, product specifications, technical documentations, web pages, and product documentation. Recipients of the surveys were also asked what specific quantitative skills are required at work such as algebra, geometry, statistics/ probability, queuing/simulation, project management, forecasting, financial accounting, budgeting/cost analysis, rates of return, discounted cash flow analysis, total quality management, operations management, and queuing analysis. Respondents indicated whether they use any of the following programs word processing, e-mail, database, spreadsheet, presentation, multimedia, desktop publishing, World Wide Web, statistical analysis software, programming or computer based training. These questions were adapted from the Western Carolina University survey (Western Carolina University College of Business, 2006). Permission was obtained from Western Carolina University to use the survey questions.

RESULTS

There were 163 alumni and 45 employers that responded to the survey by August 31, 2008. Table 1 lists the writing tasks required at work that were identified by alumni and employers. Responses to the question regarding the writing tasks that are routinely required at work are that greater than 50% of the alumni and employers reported routinely writing email, business letters, and memos; 51% of the employers who responded identified writing proposals as a required writing task.

In analyzing the responses, both the alumni and the employers reported writing emails, business letters, and memos as the writing tasks that they routinely use at work. Based on the data, business faculty may want to focus assignments in their courses that incorporate more written work from the students in the areas of business letters, memos, and writing emails.

The writing tasks that were required infrequently as indicated by fewer than 50% of the respondents were writing proposals, training guides, research reports, sales letters, promotional materials, product

specifications, technical documentation, web pages, and product documentation. Alumni respondents identified writing job descriptions, legal documents, and service agreements as other writing tasks required at work. Employers identified writing investigative reports, recovery letters, and audit reports as other writing tasks required at work.

Table 1: Writing Tasks Required at Work Identified By Alumni and Employers

Writing Task	Percent Alumni	Percent Employer	Number Alumni	Number Employer
E-mail	91%	93%	149	42
Business letters	76%	69%	124	31
Memos	69%	67%	113	30
Proposals	44%	51%	71	23
Training Guides	42%	36%	68	16
Research Reports	34%	33%	56	15
Sales Letters	28%	31%	45	14
Promotional Materials	26%	29%	43	13
Product Specifications	25%	29%	40	13
Technical Documentation	22%	24%	36	11
Web Pages	19%	20%	31	9
Product Documentation	19%	20%	31	9
Other	10%	7%	17	3

Table 1 lists the writing tasks required at work that are identified by alumni and employers. Columns 1 and 2 list the percent of alumni and employers respectively who identified each writing task as being required at work. Columns 3 and 4 list the number of alumni and employers that identified a writing task as being required at work.

In analysis of the data, the rankings by alumni and by employers of writing skills that are not routinely required at work may be due to the higher representation of respondents employed in Finance/Insurance, Heath Care and Professional Services, and Government where more generalized writing skills such as memos, emails, and letters are used routinely. The other writing tasks that are ranked as not routinely used, are those that apply to specific job classifications such as sales letters that would be more directed to marketing and sales positions, training guides that would be required more in positions in the human resources field, while technical documentation, research reports, and product documentation are writing tasks associated with operations management and research positions.

Table 2 lists the percent alumni, percent employers, number of alumni, and number of employers that identified each quantitative task as being routinely required at work. The most important quantitative skills that were identified by at least 50% of the alumni and employers were budgeting/cost analysis, financial accounting, and project management. Forecasting was reported by 50% of the alumni to be a required quantitative task routinely required at work.

In analyzing the responses, budgeting, financial accounting, and project management were the most common quantitative skills required at work as reported by both the alumni and employers. Based on the high proportion of respondents from the financial and professional services industries, the ranking could have been influenced by skills that are job-specific to the industry. For the faculty who teach quantitative skills and operations management, the data may be beneficial to faculty in knowing the importance of the quantitative skills to the workplace. The data may influence content covered in the quantitative skills courses and what is assessed in those classes.

The quantitative skills reported by fewer than 50% as being required at work were statistics/probability, operations management, calculating rates of return, algebra, cash flow analysis, Total Quality Management (TQM)/Statistical Process Control (SPC), queuing/simulation, and geometry. Other quantitative skills that were reported by the employers that were required at work were tax, bond equations, and cost comparisons.

Table 2: Quantitative Tasks Required at Work Identified by Alumni and Employers

Quantitative Task	Percent Alumni	Percent Employer	Number Alumni	Number Employer
Budgeting/Cost Analysis	65%	71%	106	32
Financial Accounting	56%	51%	91	23
Project Management	53%	53%	86	24
Forecasting	50%	42%	82	19
Statistics/Probability	40%	33%	65	15
Operations Management	39%	33%	63	19
Rates of Return	34%	42%	56	12
Algebra	30%	27%	49	8
Discounted Cash Flow Analysis	15%	18%	25	5
TQM/SPC	8%	11%	13	4
Queuing/Simulation	6%	9%	10	3
Geometry	6%	7%	9	4
Other	4%	4%	7	2
None		9%		3

Table 2 lists the quantitative tasks required at work that are identified by alumni and employers. Columns 1 and 2 list the percentage of alumni and employers respectively who identified a quantitative task as being required at work. Columns 3 and 4 list the number of alumni and employers that identified a quantitative task as being required at work.

In analyzing the data, algebra, geometry, and statistics/probability are ranked as not routinely required at work. An explanation for this finding may be due to the courses being the foundation courses upon which higher level quantitative skills build. In addition, TQM/SPC, rates of return, cash flow analysis, queuing/simulation, and operations management may be ranked as not routinely used at work since these are skills associated with specific job classifications within industries that are not strongly represented as areas of employment by the sample populations. Job areas that require specific quantitative skills include: economics, computer support services and analytics, health services, public administration, survey researchers, financial services, and marketing and sales (Burnett, 2002). Although the employment areas represented by employers and alumni include finance and insurance, health care, professional services and government, the specific quantitative skills indicated as required at work by less than 50% of the respondents, may not be important quantitative skills within those areas of employment represented by the sample populations.

Table 3 lists the responses to the question regarding the computer software skills that are required at work. The results were that greater than 50% of the alumni and the employers reported that knowledge of email, spreadsheets, word processing, the world wide web/internet, and databases are required at work. Other software specified by alumni as being required for their work was accountant specific applications such as FoxPro, QuickBooks, and a system for golf accounting sales. Additionally alumni identified Siebel, digital editing programs, and specific programs used in our business, MS Project, Visio as other software program knowledge required for work. Other software specified by employers was proprietary software, electronic medical records, and timesheets.

In analysis of the data, the five computer software skills identified by the alumni and employers are already integrated within the core business courses at the targeted college. The data reinforces that these software skills should remain in the business curriculum. With a response indicating the use of spreadsheets at work as 91% for alumni and 78% for employers, these responses may be influenced by the positions held by the respondents in the accounting, finance/insurance, and professional services areas. These occupational areas often require knowledge of spreadsheet programs.

Less than 50% of the respondents reported that presentation/multi media, computer-based training, desktop publishing, statistics, and programming were software skills required at work. The responses to the question regarding computer software knowledge required at work are closely ranked as the four least required at work as indicated by both the business alumni and the employers. The knowledge of computer-based training, desktop publishing, and programming may be job specific rather than regularly

used software programs such as spreadsheets, presentation, database, word processing, world wide web/internet, and email. Statistics software would be used within the statistics courses or in the management information systems courses which are foundation courses within the business curricula at the targeted college.

Table 3: Computer Software Required at Work Identified by Alumni and Employers

	Percent Alumni	Percent Employer	Number Alumni	Number Employer
E-mail	93%	96%	96	43
Spreadsheet	91%	78%	78	35
Word Processing	88%	96%	96	43
World wide web/Internet	74%	71%	71	32
Database	60%	51%	51	23
Presentation/Multimedia	50%	47%	47	21
Computer-Based Training	40%	38%	38	17
Desktop Publishing	17%	31%	31	14
Statistics	13%	11%	11	5
Programming	10%	22%	22	10
Other	10%	4%	4	2
None	24%	2%	2	1

Table 3 lists the computer software skills required at work that are identified by alumni and employers. Columns 1 and 2 list the percentage of alumni and employers respectively who identified a particular computer software skill as being required at work. Columns 3 and 4 list the number of alumni and employers that identified a particular computer software skill as being required at work.

Table 4 lists the Pearson's r values that were calculated by comparing the alumni and employer data for their answers to the questions about writing tasks, quantitative tasks, and computer skills. There is a strong correlation between the alumni and employer for each of the skills meaning that the alumni and employer agree on what skills are important for writing, quantitative, and

Table 4: Correlations between Alumni and Employer Data for Writing Task, Quantitative Tasks, and Computer Skills Computer Skills

Task/Skill	Pearson r	R^2
Writing Tasks	0.989	0.98
Quantitative Tasks	0.967	0.94
Computer Skills	0.973	0.95

Table 4 lists the Pearson's r value that was calculated by comparing the alumni and employer data for their answers to the questions about writing tasks, quantitative tasks, and computer skills. There is a strong correlation between the alumni and employer for each of the skills meaning that the alumni and employer agree on what skills are important for writing, quantitative, and computer skills

The R^2 shows a less than 5% variation for writing and computer skills which is statistically significant at the 5% level. Quantitative skills have a 6% variation in data. This is an important finding for revising curricula as the target college was able to identify common writing, quantitative, and computer skills as discussed in the previous section and that these findings are statistically significant.

Limitations of the Study

Several limitations existed in this study. One limitation is that data were collected from respondents associated with one college and the findings may not be generalized to other colleges. In addition, data collected from the employers and business alumni from the targeted college were limited by the region in which the business alumni and employers were located; the regional industries were in the following sectors: financial and insurance, hospitality, health care, tourism, education, and public service. There were few industries in the region that were nationally or internationally based. Another limitation of the study was that the mailing addresses for the business alumni and for the employers were not kept current; mailed surveys were returned because of incorrect, undeliverable addresses for the alumni and for employers. Specifically of the 2,383 alumni who received the survey packets, 300 were returned due to

undeliverable addresses. Of the 140 survey packets mailed to employers, 45 surveys were returned because of undeliverable addresses. The sample size of 45 employers is very limited.

Finally, because a convenience sample was used, distribution of respondents was skewed more to two industries: of the respondents, 25% of the alumni and 16%of employers indicated they worked in the professional services sector, which includes accountants; 23% of the alumni and 24% of employers indicated they worked in the finance and insurance industries. The representation coming from the professional services, finance, and insurance industries may have influenced survey responses regarding skills and competencies needed in the workplace.

RECOMMENDATIONS

Based on the findings of this study, the following areas can be assessed within a designated core course in the business curricula: (a) communication abilities, (b) analytic skills, and (c) use of information technology. The assessments can be done through use of written and oral presentations by students to case studies or business simulations, use of technology through presentation software and Excel spreadsheets for data analysis, and through written and oral interpretation of case studies that are based on international business issues and a diverse workforce.

The analysis of data provided faculty with information for course and curricula revisions and to establish assessment criteria in preparation for the AACSB accreditation and the regional reaccreditation by MSCHE. The student learning outcomes assessment measures that will be implemented by the faculty should be monitored each semester by a faculty designee from the School of Business assessment committee. It is recommended that colleges and universities routinely include employer and alumni surveys as part of their curriculum assessments as their feedback can provide valuable information for revising the curriculum.

CONCLUSIONS

The results of the survey showed strong correlations with the writing tasks (r=0.989), quantitative tasks (r=0.967), and computer software (r=0.973) identified by both the alumni and the employers as being tasks required at work. E-mail, business letters, and memos were the most common written communication required at work. Budgeting, financial accounting, project management, and forecasting were most common quantitative skills required Word processing, spreadsheets, email, and world wide web were most common computer applications used. These statistically significant findings confirm that business professionals and employers agree on the skills required for work.

Based on the findings, business faculty can begin to review the needs of the program tracks and set objectives for the skills and competencies students should attain upon completion of a business program track. In revising the content of the core courses, faculty can use the responses of the employers and business alumni regarding the writing, quantitative and computer skills and align course content with those skills and competencies. In designing assessments for the core course content, the data on the skills that are very important and important for the workplace can provide the framework for the areas in which student competency can be assessed. Faculty can meet and determine the instruments and projects that can be used to measure the skills and competencies of the students. In addition, faculty can determine in which of the business core classes the assessments will take place.

In future studies, rather than using convenience sampling, more attention should be given to obtaining matched samples of business alumni and employers who represent the variety of businesses and industries in the region.

APPENDIX

Alumni and Employer Survey Questions: Business Skills and Competencies Needed in the Workplace

1. Sector of employment: __ Public __ Private __ Not for profit __ Self-employed

2. Check the box by the category that best describes your area of employment/organization.

☐	Construction	☐	Public utility
☐	Education (elementary, secondary, higher education)	☐	Real estate and housing
☐	Finance and insurance	☐	Religious and charitable service
☐	Gaming and hospitality	☐	Retail and wholesale
☐	Government	☐	Social services
☐	Health care	☐	Telecommunications/information systems
☐	Manufacturing	☐	Transportation
☐	Professional services	☐	Not currently employed outside the home
☐	Public safety (defense, police, fire)	☐	Other_____

3. Approximately how many people are in your organization? Please circle your answer.

1-49	1,000-1,999
50-99	2,000-2,999
100-499	3,000-3,999
500-999	4,000 or more

4. Which writing tasks are routinely required at work? Check all that apply.

☐	E-mail	☐	Research reports
☐	Memos	☐	Product specifications
☐	Business letters	☐	Product documentation
☐	Sales letters	☐	Promotional
☐	Web pages	☐	Technical documentation
☐	Proposals	☐	None
☐	Training guides	☐	Other (fill in)

5. Which quantitative skills are required at work? Check all that apply.

☐	Algebra	☐	Budgeting and cost analysis
☐	Geometry	☐	Rates of return
☐	Statistics and probability	☐	Discounted cash flow analysis
☐	Queuing and simulation	☐	TQM and SPC
☐	Project management	☐	Operations management
☐	Forecasting	☐	None
☐	Financial accounting	☐	Other (fill in)

6. Which computer software is required at work? Check all that apply.

☐	Word processing	☐	Statistics
☐	E-mail	☐	World Wide Web and Internet
☐	Database	☐	Programming
☐	Spreadsheet	☐	Computer-based training
☐	Presentation and multimedia	☐	None
☐	Desktop publishing	☐	Other (fill in)

Note. TQM = total quality management; SPC = statistical process control. Questions 4, 5, and 6 in this survey were adapted and reprinted with permission from *1998 College of Business Alumni Survey* (pp. 2-3) by Western Carolina University, College of Business, 2006. Retrieved March 10, 2006, from Western Carolina University, College of Business Web site: http://www.wcu.edu/COB/Documents/index.htm

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