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Improving the Value of Major Courses for Graduating Quantitative Versus Qualitative Business Major Students

Gary Blau[1] & Pallavi Chitturi[2]

[1] Management Department, Fox School of Business, Temple University, Philadelphia, PA, USA

[2] Statistics, Operations, and Data Science Department, Fox School of Business, Temple University, Philadelphia, PA, USA

Correspondence: Gary Blau, Management Department, Temple University, Philadelphia, PA 19111, USA. Tel: 1-215-204-8099. E-mail: gary.blau@temple.edu

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Abstract

Using two independent academic cohorts, i.e., Fall 2021-Spring 2022 (n = 356) and Fall 2022-Spring 2023 (n = 180) of graduating business students, the relationship of an open item, "what do you believe could have improved the value of your major course experience?", was asked to both quantitative majors and qualitative majors. Individual majors were coded into broader quantitative and qualitative major categories. The Fall 2021-Spring 2022 sample was broken down into n = 219 quantitative business majors and n = 137 qualitative business majors. The Fall 2022–Spring 2023 sample was broken down into n = 112 quantitative business majors and n = 68 qualitative business majors. Analysis across this open item for both samples of quantitative majors revealed that curriculum improvement was more desired over employment applicable skills. However, the opposite result was found for both samples of qualitative majors, increased employment applicable skills over curriculum improvement. Having improved instruction, e.g., more engaged professors, was a common theme across both majors in both years.

Keywords: business students, improving course major, curriculum-improvement, employment applicable skills, quantitative major, qualitative major

1. Introduction

Over the past 13 years, overall undergraduate college enrollment in the United States has dropped from 18.1 million to 15.8 million, a loss of 13% (College Transitions, 2024). This loss of undergraduates includes business students (Dawkins, 2023). A loss of undergraduate students means lost revenue for tuition-dependent colleges (Dickler, 2022), and can lead to school closures as well as faculty layoffs (Inside Higher Education, 2024). This loss of students, accelerated by the Covid-19 pandemic has not been restricted to the United States (Du, 2022).

The goal of this study was to find out how to improve the major course experiences of graduating business students by using an open item. Two separate academic year cohorts of graduating business students were sampled, Fall, 2021 - Spring, 2022; and Fall, 2022 - Spring, 2023. Each sample was then broken down into more general quantitative versus qualitative major categories to find out how to improve their major course experience. Open item analysis for both samples of quantitative majors revealed that curriculum improvement was more desired over employment applicable skills, while for both samples of qualitative majors, there was a call for increased employment applicable skills over curriculum improvement. Improved instruction was a common equal theme across both samples. This paper includes the following sections: Literature Review, Research Question, Methods, Results and Discussion.

1.1 Literature Review

1.1.1 Improving Major Coursework Experience

Choosing a major and being satisfied with it is a big decision for any college student, since it determines much of the subsequent coursework and typically affects their post-graduation job search. The US Department of Education (2017) found that 30% of college students changed their majors within three years of enrollment, which was further broken down into 20% changing their major once and 10% changing two or more times, prior to graduation. Satisfaction with one's major is a critical component of student persistence (Schreiner & Nelson,

2013). Little prior research exists on studies specifically focused on improving business students' major coursework experience. Overall, it would be expected however, that such improved coursework experience would increase student satisfaction (Grady, 2013). Prior research on variables affecting business student satisfaction will now be briefly reviewed.

1.1.2 Curriculum, Employment Applicable Skills, and Instruction as Key Variables

Using samples of seniors (n=372) and freshmen (n=291), Marks, Haug and Huckabee (2016) investigated business major satisfaction by dividing 34 survey items into three perceived categories: *curriculum matters* – 17 items, e.g., adequate opportunities to refine computer skills,; *interaction between faculty and students* – 12 items, e.g., feedback on assignments submitted for class work in a timely manner; and *outside activities* – 5 items, e.g., opportunity to do internships. Using a broader sample, Tessema, Ready and Yu (2012) found that that perceived instruction quality, capstone course experience, academic advising, overall college experience, and preparation for career or graduate school impacted undergraduates' satisfaction with their major. Gibson (2010) found that perceived quality of teaching, skills and knowledge acquired, and the curriculum itself, were the most significant correlates of business student satisfaction. Collectively these studies suggest that three factors, perceived curriculum, employment applicable skills, and instruction are important variables to consider.

Looking more closely at individual variables within these three factors, Dawkins (2023) noted the importance of an up-to-date curriculum in reversing declining accounting major enrollments. Blau, Halbert, Atwater, Kershner, and Zuckerman (2016) found that perceived course work challenge within the curriculum was also positively related to business student degree satisfaction. Another study showed that both course work challenge and internships completed were positively related to business degree satisfaction (Blau, Williams, Jarrell, & Nash, 2019). Yosoff, McLeay, and Woodruffe-Burton (2015) found that perceived knowledgeable and responsive faculty as well as their providing useful/prompt feedback were important to understand business student satisfaction.

Specific curriculum design factors (e.g., activities focused on applying discipline knowledge in the workplace) had an impact on students' perceived employability (Ferns, Russell & Smith, 2015). The Wiley (2022) report found that 81% of surveyed students felt that it was important for colleges to offer company-related projects to gain real world knowledge, beyond their curriculum. Collectively these studies further reinforce curriculum, employment applicable skills and instruction as important for improving course work in one's business major.

1.1.3 Distinguishing Quantitative Versus Qualitative Business Majors

Sanford, Ross, Rosenbloom, Singer and Luchsinger (2014) distinguished between quantitative (e.g., accounting, finance) and qualitative (e.g., marketing, management) business majors. Extending this distinction, Blau, Pred, Drennan, and Kapanjie (2016) classified accounting, finance, risk management and insurance, management information systems, actuarial science, economics, and statistics as *quantitative majors* versus human resource management, management, marketing, international business, entrepreneurship, legal studies, and real estate as *qualitative majors.* This classification system by Blau et al. (2016) will be used in this study. To the authors' knowledge, no prior research exists comparing quantitative versus qualitative business majors on how to improve their major coursework experience. In addition, this study will use qualitative data to test the following research question (*RQ*):

1.1.4 Research Question

RQ – are there differences between quantitative versus qualitative business majors in perceived curriculum, employment applicable skills, and instruction for improving their major coursework experience?

2. Method

2.1 Samples and Procedure

The Senior Student Satisfaction Survey (SSSS), using an online Qualtrics survey link, was emailed to all Fall 2021 graduating undergraduate business students from a state-supported university in the Mid-Atlantic US, and repeated for Spring 2022 graduates. Despite repeated Dean's office email invites, complete voluntary responses were returned by only 88 out of 388 students (23%) in the Fall and 272 out of 942 students (29%) in the Spring. This was aggregated into an n = 356. This same survey and process were followed for Fall 2022 and Spring 2023 graduating business students. Seventy-two out of 304 (24%) completed the SSSS in the Fall 2022, and 108 out of 869 (12%) in the Spring 2023; aggregated into an n = 180. Data screening only included students who remained business majors. The University Institutional Review Board (IRB) waived the informed consent requirement since SSSS data was collected at the end of every Fall and Spring semester as part of the on-going annual business school evaluation process. The authors received only "scrubbed data" without any identifying

information after individual students had been matched to their demographic and school-related variables below.

2.2 Measures

Demographic variables**.** Three record-based variables were measured: gender, race and within state residency. Gender was coded as 0= female, 1 = male. Race as 1 = Hispanic, 2 = Asian, 3 = White, 4 = African American, 5 = Multiracial, 6 = unknown. Within state residency as 0 = no, 1 = yes.

School background variables. Two record-based student variables were measured: Full-time/part-time status, where 0 = full-time (at least 12 credits/semester), 1 = part-time status (less than 12 credits/semester), and curriculum major. For double majors (5% of the sample), the first declared major was used.

Open item. This item asked at the end of each survey: "What do you believe could have improved the value of your major course experience?"

2.3 Data Analyses

Frequency data is reported for nominal demographic and school background variables for both academic cohort samples, i.e., Fall 2021-Spring 2022 (n = 356) and Fall 2022-Spring 2023 (n=180), including aggregating individual majors into broader quantitative and qualitative categories. Following Blau et al. (2016) *quantitative majors* were represented by: Finance/Financial Planning, Accounting, Risk Management and Insurance, Management Information Systems, Actuarial Science, Economics, Statistics/Data Analytics, and Supply Chain Management; while *qualitative majors* were represented by: Marketing, Business Management, Human Resource Management, International Business, Entrepreneurship, and Real Estate. The slight change from the initial Blau et al. (2016) classification was due to Supply Chain Management being merged with Statistics/Data Analytics.

Lewis (2001) suggested that open comments be organized into categories representative of the literature, understanding that an exact matching of open comment categories to a priori factors in the literature would be very challenging. Based on prior literature, individual student responses were coded into one of four broader categories. The four categories were: (1) Curriculum Improvement (CI); (2) Employment Applicable Skills (EAS); (3) Instruction and (4) none of the first three categories (Miscellaneous).

After applying this category coding, percentages for quantitative majors and qualitative majors for the CI versus EAS categories were analyzed using a z-score test. Third category Instruction-related responses were also compared. However, the fourth category was not analyzed since it did not reflect either CI, EAS, or Instruction. The z-score tests if there is a significant difference in the percentage of comments in the CI versus EAS categories, or between Instruction categories, for each sample. Categories are color coded in Tables to clarify each of the coding categories; dark brown is CI, blue is EAS, dark blue is Instruction, and purple is none of the three categories (Miscellaneous).

Prior to computing z-scores, to lessen rater bias and improve coding process validity (Johns & Miraglia, 2015), the first author did an initial coding of responses using the four-category rubric, then waited eight weeks to separately code again using the same rubric. Johns (1994) has argued that allowing a sufficient time lag for separate recoding can be an alternative method for qualitative data coding reliability. An overall test-retest correlation of .72 (Hinkin, 1998) was found between initial-repeat coded categories. Coding discrepancies were resolved by waiting an additional six weeks to code discrepancies a third time, which served as the "tie breaker." Final table rubrics tested are presented.

3. Results

3.1 Demographic and School Background Variables

Table 1 presents the demographic and school background variable results for the 2021-22 and 2022-23 samples. Comparisons show general consistency for gender (males slightly higher); race (White majority); state residency (in state dominant); full-time status dominant; and a higher percentage of quantitative versus qualitative majors, from summing the individual majors using the above-noted categorization.

Table 1. Demographic and school background variables

Academic Year Cohort	2021-22	2022-23
Variable	(n =356)	(n = 180)
Gender		
Female	n = 168 (47%)	n = 83 (46%)
Male	n = 188 (53%)	n = 97 (54%)
Race		
Hispanic	n = 18 (5%)	n = 16 (9%)
Asian	n = 53 (15%)	n = 27 (15%)
White	n = 211 (59%)	n = 108 (60%)
African American	n = 42 (12%)	n = 17 (5%)
Multiracial	n = 23 (7%)	n = 8 (5%)
Unknown	n = 9 (2%)	n = 4 (2%)
State Residency		
In State	n = 69 (80%)	n = 141 (78%)
Out of State	n = 17 (20%)	n = 39 (22%)
Full-time/Part-time		
Full-time	n = 268 (75%)	n = 149 (83%)
Part-time (less than 12 hours)	n = 88 (25%)	n = 31 (17%)
Major		
Accounting	n = 46 (13%)	n = 22 (12%)
Actuarial Science	n = 17 (5%)	n = 10 (6%)
Business Management	n = 42 (12%)	n = 19 (11%)
Economics	n = 7 (2%)	n = 2 (1%)
Entrepreneurship	n = 7 (2%)	n = 2 (1%)
Finance/Finance Planning	n = 63 (17%)	n = 33 (19%)
Human Resource Management	n = 13 (4%)	n = 8 (4%)
International Business	n = 13 (4%)	n = 7 (4%)
Legal Studies	n = 4 (1%)	n = 3 (2%)
Management Information Systems	n = 19 (5%)	n = 13 (7%)
Marketing	n = 52 (14%)	n = 29 (17%)
Real Estate	n = 5 (1%)	n = 0
Risk Management and Insurance	n = 1 (1%) n = 46 (13%)	n = 21 (12%)
Statistics/Data Analytics	n = 10 (3%)	n = 4 (2%)
Supply Chain Management	n = 12 (3%)	n = 3 (2%)
Quantitative Majors	n = 219 (61%)	n = 112 (62%)
Qualitative Majors	n = 137 (39%)	n = 68 (38%)

3.2 Research Question Results

The tested *RQ* was: *are there differences between quantitative versus qualitative business majors in perceived curriculum, employment applicable skills and instruction for improving their major coursework experience?* This was based on asking "what do you believe could have improved the value of your major course experience?" The results testing this *RQ* are presented below in Tables 2 and 3. Categories are color coded in Tables to clarify each of the coding categories; dark brown is CI, blue is EAS, dark blue is Instruction, and purple is none of the three categories (Miscellaneous). As noted in Table 2, when adding up the curriculum-based frequencies, and converting to percentages, **z-score testing (bolded)** shows that quantitative majors emphasize curriculum improvement more than employment applicable skills. However, there is no difference on Instruction. The overall sample sizes are smaller because not all respondents answered the open item.

Table 2. How to improve the value of major course experience for quantitative majors

Category	2021-22 Quantitative Majors, n = 219	2022-23 Quantitative Majors, n = 112
Miscellaneous – e.g., more required course flexibility; fewer core courses; more streamlined core courses; scheduling issues, more online courses; more teaching assistants to help **Miscellaneous**[d]	n = 11 (12%) – not applicable	n = 7 – not applicable
Curriculum-related - e.g., more non-public accounting courses; more experiential learning. **CI**[a]	n = 13 (14%)	n = 12 (3%)
Simulations/applied problems – e.g., being graded on learning, not results; more work applied problems; better problem applications to business, more creativity required. **EAS**[b]	n = 7 (7%)	n = 3 (5%)
Cover more topics - e.g., Six Sigma, greater variety, e.g., negatives of insurance; more technology, e.g., Tableau or Power BI capital markets, valuation. **CI**[a]	n = 8 (8%)	n = 4 (65%)
Need course revision - e.g., Finance too many formulas; learn Excel without understanding reasons; less memorization more how to interpret; more current coding; learn different Finance modeling beyond Excel; less stressful bootcamp/courses (e.g., Risk Management); more in class, experiential learning; more rigor; one platform for better integration; more individual projects in capstone; learn more about how to invest. **CI**[a]	n = 18 (19%)	n = 6 (9%)
Less group work. **CI**[a]	n = 2 (1%)	n = 0
Instruction – professors need more enthusiasm; quicker feedback, more learning approaches; more structured lectures; speak fluent English; more engaging, clearer expectations; lack of diversity, too many adjuncts; focus more on learn vs grades. **Instruction**[c]	n = 20 (21%)	n = 15 (23%)
Nothing – all good in major. **Miscellaneous**[d]	n = 9 (10%)– not applicable	n = 10 (16%) – not applicable
Employment-related – e.g., more industry speakers as guests; more experiential outreaches; internships; greater emphasis on professional exams in relevant classes, e.g., Property Casualty Underwriter. **EAS**[b]	n = 7 (7%)	n = 8 (28%)
2021-22-Curriculum Improvement - Total # Comments	(13 + 8 + 18 + 2) = 41/95 =	

	43%	
2021-22- EAS - Total # Comments	(7 + 7) = 14/95 = 15%	
2022-23-Curriculum Improvement - Total # Comments		(12 + 4 + 6) = 22/65 = 34%
2022-23- EAS - Total # Comments		(3 + 8) = 11/65 = 17%
2021-22 Instruction versus 2022-23 **Instruction z-score test (**21% versus 23%) **Z = -.36, p = .72**[e]		
Z score test, 2021-2022, **CI** vs **EAS** (43% vs 15%), (two-tailed)	**Z = 4.32, p < .01**[d]	
Z score test, 2022-2023, **CI** vs **EAS** (34% vs 17%), (two-tailed)		**Z = 2.22, p < .05**[d]

Note – not all gave open responses; some gave multiple coded responses.

[a] **CI = Curriculum Improvement**

[b] **EAS = Employment Applicable Skills**

[c] **Instruction**

[d] **Miscellaneous**

[e] https://www.socscistatistics.com/tests/ztest/default2.aspx

However, **z-score testing (bolded)** shows that qualitative majors emphasize increased employment applicable skills more than curriculum improvement in Table 3. Again, there is no difference on Instruction. The overall sample sizes are smaller because not all respondents answered the open item.

Table 3. How to improve the value of major course experience for qualitative majors

Category	2021-22 Qualitative Majors, n = 137	2022-23 Qualitative Majors, n = 68
More aggressive Student Professional Organizations – e.g., reaching out to majors sooner; younger alumni marketing the employment-oriented benefits of joining **EAS**	n = 3 (6%)	n = 2 (4%)
More real-world resources for Business school - e.g., internship opportunities; field trips; current business manager speakers **EAS**	n = 6 (11%)	n = 4 (8%)
More real-world application – e.g., HubSpot, Adobe Premiere Pro, what employers use; better connection of major to actual jobs; getting more measurable work-related skills; **EAS**	n = 10 (19%)	n = 11 (22%)
Curriculum structure - e.g., less core courses; more realistic core courses. **Miscellaneous**[d]	n = 5 (9%)	n = 7 (14%)
Nothing – enjoyed major; satisfied. **Miscellaneous**[d]	n = 6 (11%) – not applicable	n = 4 (8%)
Instruction – e.g., professors need to be more engaging/passionate: more prompt feedback, responsive to emails; more accessible; more inclusive/interactive learning; not biased; better explanations; more structure in courses; better communication skills, less lecturing; less exams, more projects; more receptive to feedback. **Instruction**[c]	n = 9 (17%)	n = 8 (16%)
Group work-related –e.g., having more in courses; better integration with	n = 3 (6%)	n = 4 (8%)

course work; more group exercises. **CI**[a]		
Updated curriculum - e.g., more rigor, restructure projects so more different across classes; better integration; reduce redundant information across courses. **CI**[a]	n = 5 (9%)	n= 2 (4%)
Miscellaneous – e.g., better course scheduling, more options, more tutoring, less night, better academic advising, study abroad chance, smaller classes, too many online courses. **Miscellaneous**[d]	n = 6– (11%) not applicable	n = 8 (16%)– not applicable
2021-22-Curriculum Improvement - Total # Comments	(3 + 5) = 8/53 = 15%	
2021-22- EAS - Total # Comments	(3 + 6 + 10) = 19/53 = 36%	
2022-23-Curriculum Improvement - Total # Comments		(4 + 2) = 6/50 = 12%
2022-23- EAS - Total # Comments		(2 + 4 + 11) = 17/50 = 34%
2021-22 Instruction versus 2022-23 **Instruction z-test** (17% versus 16%) **Z = .13, p = .90**[e]		
Z score test, 2021-2022, CI vs EAS (15% vs 36%) =	**Z = -2.45, p < .05**[d]	
Z score test, 2022-2023, CI vs EAS (12% vs 34%) =		**Z = -2.61, p < .01**[d]

Note – not all gave open responses; some gave multiple coded responses.

[a] **CI = Curriculum Improvement**

[b] **EAS = Employment Applicable Skills**

[c] **Instruction**

[d] **Miscellaneous**

[e] https://www.socscistatistics.com/tests/ztest/default2.aspx

4. Discussion

A literature review suggests this is the first empirical test for comparing how to improve major coursework for quantitative versus qualitative business majors. To test this research question, an item was asked to graduating business majors, "what do you believe could have improved the value of your major course experience?" Analysis across this open item for both samples of quantitative majors indicated that curriculum improvement had a higher response frequency versus employment applicable skills. However, the opposite result was found for both samples of qualitative majors, increased employment applicable skills had a higher response rate over curriculum improvement. Having improved instruction, e.g., more engaged professors, was a common theme across both majors in both years.

From an overall perspective, most of the highest paying 20 best jobs for US college graduates (Indeed, 2024), suggest that, based on their curriculum, quantitative majors may be more prepared for such jobs, e.g., computer technician, auditor, account manager, business operations manager, project manager, information technology manager and financial manager. Yet quantitative majors also need to remain up to date with the latest quantitative/data analysis tools in their courses, thus curriculum improvement was more desired over employment applicable skills for quantitative majors. However, qualitative majors, given the greater challenge for obtaining higher paying jobs, may be more concerned about their employment applicable skills.

Looking more closely at quantitative major student suggestions for curriculum improvement, specific course-related suggestions such as: reducing the number of formulas to memorize with more focus on understanding and interpretation; learning more current coding, including for different models beyond Excel; and better integration are consistent with D'Souza, Bement and Cory (2022); Marks et al., (2016) and Sankaran, Sankaran and Bui (2023). For qualitative majors, specific employment applicable skill (EAS) suggestions including getting students involved in student professional organizations sooner, more internships, more current

manager class speakers, and more connection of course tools to what employers' use, converges with findings by Ferns et al. (2015) and Marks et al. (2016). As noted earlier, the Wiley (2022) report found that 81% of surveyed college students felt that it was important for colleges to offer real company-led projects to help them gain knowledge applicable to the real world. In the open item analyses, these EAS-related issues were mentioned by qualitative majors, e.g., company-based projects, and meeting industry speakers. Specific suggestions for improved instruction across both samples, including better communication skills; being more passionate/enthusiastic; and clearer course expectations reinforces earlier research (Geier, 2021: Gruber, Reppel, & Voss, 2010).

4.1 Study Strengths and Limitations and Future Research

Study strengths include being able to work with two distinct academic cohorts across two years, when analyzing the open item, and finding convergent results. Perhaps the biggest study limitation was the low exit survey response rates (Hamdami, Wallin, Ashkanasy & Fenton-O'Creevy, 2023). Follow-up discussion with the survey administrators suggested several reasons for the low response rate, including, a voluntary exit survey just before graduation, lingering Covid impact, and general student disengagement. Despite precautions, e.g., a time lag between the separate coding of the open item; intra-rater bias in coding must be acknowledged as contributing to measurement error (Johns & Miraglia, 2015).

Most important, in future research, is finding a way to increase the response rate of the exit survey, thus strengthening the validity of the results found. Different options to consider include making the survey mandatory and/or having faculty, e.g., teaching senior-level capstone courses across majors, emphasize the importance of the survey. A higher response rate could allow further exploration of differences between individual majors. The generalizability of the results found should be tested using other US samples of quantitative and qualitative major business students, e.g., from private colleges, as well as in other geographical regions, and internationally.

4.2 Conclusion

An exploratory study to understand how to improve the value of major course work experiences, distinguishing between quantitative and qualitative majors, was done. Given the decline in college student enrollment, and the challenges of not only enrolling more students but retaining them, such research must be continued with the goal of improving student satisfaction, which has been shown to be critical for retention. Satisfaction with one's major is a critical component of more general business student satisfaction. This study reinforces the continued importance of improving the curriculum and employment-related skills to enhance the value of major coursework and collectively all business student satisfaction with their major.

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