Journal of Education and Development; Vol. 9, No. 1; February, 2025
ISSN 2529-7996 E-ISSN 2591-7250
Published by July Press

Business Students' Quantitative Versus Qualitative Major Satisfaction – Testing Their Relationships to Perceived Curriculum-improved Abilities and Employment Applicable Skills Scales

Gary Blau[1] & Michael Schirmer[2]

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

[2] Marketing Department, Fox School of Business & Management, Temple University, Philadelphia, PA, USA

Correspondence: Gary Blau, Management Department, Fox School of Business & Management, Temple University, Philadelphia PA, 19122, USA. Tel: 1-215-204-8099. E-mail: gary.blau@temple.edu

Received: November 1, 2024 Accepted: December 11, 2024 Online Published: February 10, 2025

doi:10.20849/jed.v9i1.1458 URL: https://doi.org/10.20849/jed.v9i1.1458

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 relationships of three perceived curriculum-improved abilities (CA) scales and an employment applicable skills (EAS) scale to type of business major satisfaction were tested. Quantitative versus qualitative majors were separated. Confirmatory factor analyses verified the three-scale structure of the 12-item CA measure as: Business Problem Solving (6 items); Presentation Skills (3 items) and Team-related Skills (3 items). Regression results indicated that Business Problem Solving had a positive relationship to quantitative major satisfaction, while EAS was related to qualitative major satisfaction. Open item analyses converged with these results.

Keywords: curriculum-improved abilities, employment applicable skills, quantitative major satisfaction, qualitative major satisfaction

1. Introduction

Undergraduate enrollment in the United States (US) has been declining over the last several years, across all types of majors including business students (Dawkins, 2023). Retention of accepted students through to their graduation is important. College student satisfaction remains a critical factor in student retention (Blau, Williams, Jarrell, & Nash, 2019). The first goal of this study was to confirm the three-scale structure of a new 12-item curriculum-improved abilities (CA) measure, using two separate academic year cohorts of graduating business students, Fall, 2021 - Spring, 2022; and Fall, 2022 - Spring, 2023. The second goal was to then split these two cohorts into quantitative versus qualitative majors, to study the relationships of the CA scales and an employment applicable skills scale (EAS) to business student major satisfaction beyond controlled-for demographics and school-related variables. Finally, open item analysis was used to also examine the role of EAS and general CA on the satisfaction of quantitative versus qualitative business majors.

2. Literature Review

2.1 Studies of Curriculum-related Variables

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. Marks, Haug, and Huckabee (2016) investigated business major satisfaction by comparing freshmen versus seniors on three perceived categories: curriculum matters, interaction between faculty and students, and outside activities. Dawkins (2023) noted the importance of an up-to-date curriculum in reversing declining accounting major enrollments. Prior research has identified curriculum perceptions as important to business student degree satisfaction (Blau et al., 2019). Blau and Drennan (2022) tested twelve curriculum-improved abilities (CA) and found that these CA items could be separated into three reliable and related but distinct scales, labeled (number of items, coefficient alpha reliability estimate): Business Problem Solving (6 items, .90), Presentation Skills (3 items, .86), and Team-related Skills (3 items, .77).

This study extends prior research by testing if the three CA scales can be confirmed, using two separate

academic year cohorts of graduating business seniors, i.e., Fall 2021 - Spring 2022; then Fall 2022 - Spring 2023; leading to the first research question (*RQ1*):

RQ1 – Can the three curriculum-improved ability (CA) scales, Business Problem Solving, Presentation Skills, and Team-related Skills, be confirmed using two separate samples?

2.2 Distinguishing Quantitative Versus Qualitative Business Majors

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.* The classification system by Blau et al. (2016) will be used here.

2.3 Studies of Employment Skill Variables

This study also investigated the impact of employment applicable skills (EAS) on satisfaction with major. Ferns, Russell and Smith (2015) found that specific curriculum design factors (e.g., activities focused on applying discipline knowledge in the workplace) had an impact on students' perceived employability. 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. Such research suggests that the relationship of perceived EAS skills to satisfaction with major should be explored.

2.4 Controlling for Demographics and School Related Variables

Research on business student satisfaction has found that controlling for such demographic variables as gender, in-state versus out-of-state resident, or school-related variables, e.g., Grade Point Average or GPA (Blau et al., 2019), can be useful. Given the lack of prior research focusing on quantitative major and qualitative major business student satisfaction, two research questions, *RQ2a* and *RQ2b* will be tested:

RQ2a – Can the three CA scales each explain significant quantitative major and qualitative major satisfaction beyond controlled for demographic variables and school-related variables?

RQ2b – Can EAS explain significant quantitative major and qualitative major satisfaction beyond controlled for demographic variables, school-related variables, and the CA scales?

2.5 Linking Closed Item to Open Item Responses

The college student teaching evaluation literature has supported linking closed-response to open-response items to demonstrate convergent validity (Boysen, 2016). When students rated certain closed items higher (lower), there could be more frequent positive (negative) open responses if the student then voluntarily went into further detail. Lewis (2001) suggested that open comments be organized into categories representative of the closed items, understanding that an exact matching of open comment categories to specific closed item content is very challenging. This leads to the third research question (RQ3):

RQ3 – Will open item analyses support the results found in RQ2a and RQ2b?

3. Method

3.1 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 268 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 on-going SSSS data collection was part of the annual business school evaluation process. The authors received only "scrubbed data" without any identifying information after individual students had been matched to their record-based demographic and school-related variables below.

3.2 Measures

Demographic variables. Three 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. State residency as 0 = no, 1 = yes.

School background variables. Three variables were measured: overall GPA: 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 (using the first declared major).

Curriculum-improved abilities. Twelve items were asked, using the following prompt: "the Business School's Bachelor of Business Administration (BBA) curriculum improved my ability to:…." and items were rated using a 7-point response scale from 1 = strongly disagree to 7 = strongly agree. Item content was taken from the BBA program learning goals. These 12 items will be listed in Table 2. This 7-point response scale was repeated for the EAS and satisfaction with major variables.

Employment applicable skills. A two-item measure was used. The two items were: "the program helped me develop a skill set applicable to today's employment market," and "the program met my expectations." The reliability estimates for this scale were .87 for the Fall 2021-Spring 2022 sample and .84 for the Fall 2022-Spring 23 sample.

Satisfaction with major. One item, stated "I am satisfied with my major courses." Satisfaction with major is different than general business degree satisfaction because degree satisfaction involves course work beyond one's major, e.g., required core courses (Blau et al., 2019), as well as non-business electives.

Open item. This item asked at the end of each survey: "What do you believe has been the most valuable part of your major course experience?"

3.3 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. To test *RQ1,* confirmatory factor analyses (CFA) were done on each academic cohort for the 12 CA items (using Amos within SPSS, 2021). Overall model fit threshold indices and item variance estimates for each cohort are provided. Means, standard deviations, and correlations for continuous variables are reported for each cohort. Using a more nuanced data breakdown, hierarchical regression analyses tested *RQ2a* and *RQ2b,* for four distinct samples: (1) Fall 2021-Spring 2022 Quantitative Majors (n = 219); (2) Fall 2021-Spring 2022 Qualitative Majors (n = 137); (3) Fall 2022-Spring 2023 Quantitative Majors (n = 112); and (4) Fall 2022-Spring 2023 Qualitative Majors (n = 68). Prior to regression analyses, race was recoded into a binary variable (0 = White, 1 = Non-white), allowing for easier interpretation. SPSS (2021) was used for these analyses. Demographic variables (Step 1) and school-related variables (Step 2) were controlled for prior to testing the impact of CA scales (Step 3) and EAS (Step 4) on satisfaction with major.

Consistent with the regression analyses, open item responses, separating quantitative and qualitative majors, were analyzed. Individual responses were coded into one of three broader categories using the scale-based data as a framework. The three categories were: (1) Curriculum-improvement Abilities (CA); (2) Employment Applicable Skills (EAS) and (3) Not CA or EAS. Given how the open item was asked, the CA category used could not drill down to CA scale-specificity, which is common in open item research Boysen (2016). Thus, this CA category represented aggregated student responses reflecting either business problem solving, presentation skills, or team-related skills. After applying this three-category coding, percentages for quantitative majors and qualitative majors for the CA versus EAS categories were compared using a z-score test. To lessen rater bias and improve coding process validity (Johns & Miraglia, 2015), the first author did an initial coding of responses using the 3-category rubric, then waited eight weeks to separately code again using the same rubric. An overall test-retest correlation of .71 was found between initial-repeat coded categories, which exceeds the recommended threshold of .70 (Stevens, 1996).

4. Results

4.1 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.

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 = 84 (47%)
Male	n = 188 (53%)	n = 96 (53%)
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 (15%)	n = 29 (17%)
Real Estate	n = 5 (1%)	n = 0
Risk Management and Insurance	n = 47 (13%)	n = 21 (12%)
Statistics/Data Analytics	n = 10 (3%)	n = 4 (2%)
Supply Chain Management	n = 12 (3%)	n = 3 (2%)
Quantitative Majors[a]	n = 219 (61%)	n = 112 (62%)
Qualitative Majors[a]	n = 137 (39%)	n = 68 (38%)

[a] 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. *Qualitative majors* were represented by: Marketing, Business Management, Human Resource Management, International Business, Entrepreneurship, and Real Estate.

4.2 Research Question 1 Results

Research question one (*RQ1*) asked *can the three curriculum-improved ability (CA) scales be confirmed using independent samples?* Two data-to-model fit indices, the Comparative Fit Index (CFI) and Adjusted Goodness of Fit (AGFI), and two error statistics, the Root Mean Square Residual (RMSR) and Root Mean Square Error of Approximation (RMSEA) were used. Recommended threshold cut offs for these statistics (Hu & Bentler, 1999) are: CFI (.95); AGFI (.90); RMSR (.10) and RMSEA (.06). For the 2021-22 cohort, in the final 3-factor model, all four statistic thresholds were met, and for the 2022-23 cohort, three of four thresholds were met. The exception being AGFI = .89. Follow-up item variance analyses in Table 2 found that all 12 items exceeded the .25 variance estimate threshold (Hu & Bentler, 1999), indicating that they each loaded adequately on the three CA scales. These results confirmed earlier findings by Blau and Drennan (2022). The scale coefficient alphas, for the 2021-22 cohort were – Business Problem Solving (BPS) - .95; Presentation Skills (PS) - .89; and Team-related Skills (TS) - .81 and for the 2022-23 cohort, i.e., BPS - .94; PS - .90; and TS - .79.

Table 2. Variance Estimates for Curriculum-improved Ability Items for 2021-22 and 2022-23 Cohorts

Prompt: "The business school bachelor's in business administration (BBA) curriculum improved my ability to:"

	2021-22 Cohort Variance Estimate[a]	2022-23 Cohort Variance Estimate[b]
Scale: Business Problem Solving		
1. Apply a core body of discipline-specific knowledge to business problems	.78	.76
2. Use integrated business knowledge to identify problems, generate solutions	.85	.66
3. Understand the ethical, legal, and social responsibilities of individuals and organizations	.67	.73
4. Apply quantitative analysis and interpretations to business problems	.74	.64
5. Use quantitative data to analyze business decisions	.66	.80
6. Use software to analyze and implement business decisions	.71	.72
Scale: Presentation Skills		
7. Effectively present ideas in writing	.73	.73
8. Effectively present ideas orally	.75	.79
9. Effectively present ideas visually	.86	.81
Team-related Skills		
10. Effectively work in teams	.57	.50
11. Technical abilities and skills (i.e., use of technology, software) relevant to your discipline	.59	.56
12. Professional development (i.e., development of networking, leadership skills)	.60	.63

Note. N = 356 for 2021-22 cohort. N = 180 for 2022-23 cohort. Responses using 7-point scale, 1 = strongly disagree to 7 = strongly agree.

[a] Variance estimates for 2021-22 Curriculum-improvement ability items for 2021-22 cohort.

[b] Variance estimates for 2022-23 Curriculum-improvement ability items for 2022-23 cohort

4.3 Means, Standard Deviations, and Correlations of Continuous Variables

Means, standard deviations, and correlations of continuous variables for the 2021-22 and 2022-23 cohorts are reported in Table 3. Consistent descriptive statistics for all six variables were found, including high mean levels

of BPS, PS, TS, EAS, and satisfaction with major. Correlations for each sample showed very high correlations among the three CA scales (Stevens, 1996). However, there was still some unique variance between the CA scales. In addition, each of the CA scales also showed high correlations with EAS. All CA scales and EAS had moderate positive correlations to satisfaction with major (Stevens, 1996).

Table 3. Means, Standard Deviations and Correlations of Continuous variables for 2021-22 and 2022-23 Cohorts

Cohort			2021-22				2022-23			
Variable Name	M	SD	M	SD	1	2	3	4	5	6
1. GPA[a]	3.36	.35	3.22	.38	(----)[c]	.05	-.04	.02	.13	.11
2. Business Problem-Solving CA[b]	5.85	1.08	5.74	1.11	.08	(----)	.82**	.81**	.80**	.58**
3. Presentation Skills CA[b]	5.98	1.02	5.87	1.17	.06	.80**	(----)	.79**	.71**	.45**
4. Team-related Skills CA[b]	5.79	1.15	5.70	1.20	.08	.82**	.81**	(----)	.76**	.53**
5. Employment Applicable Skills[b]	5.94	1.12	5.66	1.28	.18*	.79**	.69**	.70**	(----)	.68**
6. Satisfaction with Major[b]	5.30	1.56	5.79	1.34	-.01	.72**	.57**	.64**	.63**	(----)

Note. 2021-22 n = 356; 2022-23 n = 180. * $p < .05$; ** $p < .01$ (both two-tailed)

[a] Cumulative Grade Point Average;

[b] Business Problem Solving CA; Presentation Skills CA; Team-related Skills CA; Employment Applicable Skills, Satisfaction with Major, 1 = Strongly Disagree to 7 = Strongly Agree

[c] Correlations below diagonal separated by (----) are for 2021-22 sample and above diagonal are for 2022-23 sample

4.4 Research Question 2 Results

Table 4 presents the final hierarchical regression models for *RQ2a* and *RQ2b*. To compare quantitative versus qualitative majors, a more nuanced data breakdown was used to test *RQs2a* and *2b*, looking at four distinct samples as shown in Table 4. The same process was used for each hierarchical regression, i.e., three demographic variables (gender, race, within state resident) were entered as step one, followed by two school related variables (overall GPA, full-time/part-time status) as step two, followed by the three CA scales BPS, PS, and TS as step three, and finally EAS as step four. For each final regression model, the incremental variance accounted for in satisfaction with major was reported, as well as any significant individual variables. Finally, the overall amount of variance and (shrinkage) for each sample is noted. To save space, results are summarized below, for further reporting detail please see Table 4.

Across all four regressions, the three demographic variables collectively accounted for minimal variance. However, race was a significant correlate ($p < .05$) in three of the four models, i.e., non-whites perceived more major satisfaction than white students. For the school-related variables minimal variance was accounted for, and no individual variable was significant. Distinct patterns emerged for the quantitative and qualitative majors in Steps 3 and 4. For Step 3, when the three CA scales were entered, only BPS was a significant correlate for both quantitative major samples, i.e., Fall 2021 – Spring 2022, $b = .84$, $t(209) = 9.32$, $p < .01$ and Fall 2022-Spring 2023, $b = .51$, $t(102) = 5.32$, $p < .01$. Thus, as perceived BPS increased, so did quantitative major satisfaction. For the qualitative majors, none of the three CA scales were significant. However, EAS accounted was a significant correlate for both qualitative major samples, i.e., Fall 2021-Spring 2022, $b = .88$, $t(127) = 8.91$, $p < .01$, and Fall 2022-Spring 2023, $b = .46$, $t(58) = 2.71$, $p < .05$. As EAS increased, qualitative major satisfaction increased.

Table 4. Final Hierarchical Regression Models for Incrementally Testing the Contributions of Demographic Variables, School-related Variables, Business Problem Solving, Presentation Skills, and Team-related Skills Curriculum-improved Abilities and Employment Applicable Skills Scales for Explaining Satisfaction with Major for Quantitative versus Qualitative Business Majors by Cohort Year

Cohort Year					2021-2022								2022-2023							
Type of Major			Quantitative (n = 219)			Qualitative (n = 137)				Quantitative (n = 112)				Qualitative (n = 68)						
Outcome			Satisfaction with Major[f]			Satisfaction with Major[f]				Satisfaction with Major[f]				Satisfaction with Major[f]						
	b	SE	R^2	Chge R^2	*b*	SE	R^2	Chge R^2	*b*	SE	R^2	Chge R^2	*b*	SE	R^2	Chge R^2				
Step 1: Demographic Variables																				
Gender[a]	-.07	.16			.25	.18			.23	.19			.39	.26						
Race[b]	.55**	.18			.42*	.19			.10	.20			.49*	.23						
Within State Resident[c]	.18	.19			.04	.21			-.25	.21			.11	.35						
			.03				.01				.03				.10					
Step 2: School-related Variables																				
Overall GPA[d]	.21	.23			.04	.32			.20	.29			.54	.42						
Full-time/Part-time Status[e]	-.25	.20			.12	.22			.15	.23			.40	.36						
			.04	.01			.02	.01			.04	.01			.12	.02				
Step 3:																				
Business Problem Solving CA[f]	.84**	.16			.06	.17			.51**	.18			.43	.27						
Presentation Skills CA[f]	.08	.13			.22	.18			.23	.14			.01	.23						
Team-related Skills CA[f]	.12	.14			.17	.15			.13	.15			.29	.20						
Step 4			52**	.49**			.03	.01			.35**	.31**			.14	.02				
Employment Applicable Skills[g]	.14	.10			.88**	.09			.27	.14			.46*	.17						
			.53**	.01			.58**	.55**			.37**	.02			.19*	.05*				
(Adjusted R^2)			(.51)				(.55)				(.35)				(.14)					

Note. *b* is unstandardized regression weight, SE = standard error; *p < .05, **p < .01; all two-tailed.

[a] Gender, 0 = female, 1 = male; [b] Race, 0 = White, 1 = Non-white; ; [c] Within State Resident, 0 = No, 1 = Yes ; [d] Overall GPA – on 4-point scale; [e] Full-time/Part-time Status, 0 = full-time, 1 = part-time; [f] CA scales - Curriculum-improved abilities - Business problem Solving, Presentation Skills, Team-related Skills, 1 = Strongly Disagree to 7 = Strongly Agree; [g] Employment Applicable Skills, Satisfaction with Major, 1 = Strongly Disagree to 7 = Strongly Agree

4.5 Research Question 3 Results

The open item asked: "What do you believe has been the most valuable part of your major course experience?" Responses, separating out quantitative and qualitative majors, were grouped into three broader categories and then classified as either: (1) (CA); (2) EAS or (3) Not CAS or EAS. The CA category represented aggregated student responses reflecting either BPS, PS or TS skills.

After this three-category coding, percentages for quantitative majors and qualitative majors for the CA versus EAS categories were analyzed for differences using a z-score test for independent proportions. Categories are color-coded for clarity, CA – reddish/brown, EAS – blue, and neither - purple. Final results are presented in Tables 5 (quantitative) and 6 (qualitative).

For Table 5, when totaling the CA responses (coded in reddish/brown) versus the EAS responses (coded in dark blue) for 2021-22 quantitative majors, the percentage difference of 43% (CA) versus 32% (EAS) resulted in a z-score of 2.08, $p < .05$. Using this same process for 2022-23 quantitative majors, a percentage difference of 41% (CA) versus 26% (EAS) also yielded a significant z-score in the same direction, i.e., $z = 2.25$, $p < .05$. These findings support the BPS (CA scale) regression result for quantitative major satisfaction.

For Table 6, when adding up the CA responses (reddish/brown) versus the EAS responses (dark blue) for 2021-22 qualitative majors, the percentage difference of 26% (CA) versus 40% (EAS) resulted in a z-score of -2.03, $p < .05$. The z-score for 2022-23 qualitative majors was also significant in the same direction, i.e., 27% (CA) versus 47% (EAS), $z = -2.17$, $p < .05$. This supports the EAS qualitative major satisfaction regression results.

Table 5. Final Rubric of Categories - Most Valuable Part of Major Experience for Two Samples of Quantitative Majors

Prompt - **What do you believe has been the most valuable part of your major course experience?**

Category	2021-22 Quantitative Majors, n = 219	2022-23 Quantitative Majors, n = 112
Specific Major courses - e.g., Accounting, Actuarial Science, Finance, Risk Management, Management Information Systems, Supply Chain; Capstone in major. **CA[a]**	n = 24 (11%)	n = 14 (14%)
Finding an Interesting Major – e.g., learning new material/challenging; current curriculum; build models to solve problems, learn coding. **CA[a]**	n =27 (15%)	n = 8 (8%)
Real World Applications/Transfer/Help Career - e.g., programming; Excel; analytical software; apply financial models; apply coding; data use to support ideas; analyze and solve business problems; cases; working with clients; real-world tools; professional exam preparation; simulations; **EAS[b]**	n =30 (17%)	n = 20 (24%)
Rigor/Professionalism/Standards Maintained Throughout Major Courses **CA[a]**	n = 6 (3%)	n = 4 (4%)
Helpful/Caring Professors - e.g., provide extra help; internships/job connections; taking the time to explain; have real world experience/how to treat future clients; want you to succeed; accessible. **Not CA or EAS[c]**	n = 44 – not applicable	n = 30 – not applicable
Industry Guest Speakers – e.g., shared expertise; luncheons; networking opportunities. **EAS[b]**	n = 12 (7%)	n = 2 (2%)
Connections Made in Classes - e.g., peers; friendships; study groups. **CA[a]**	n = 11 (6%)	n = 8 (8%)
Student Professional Organization – e.g., internship or job opportunities; bootcamps (e.g., Risk Management); professional development; taking career preparation workshops, how to begin career. **EAS[b]**	n = 15 (8%)	n = 4 (4%)
Group Projects – e.g., collaborating with peers; presenting to peers. **CA[a]**	n = 8 (5%)	n = 7 (7%)
Miscellaneous – e.g., in-person classes; pass-fail option. **Not CA or EAS[c]**	n = 1 – not applicable	n = 2 not applicable

2021-22-Curriculum Improvement - Total Comments	**76 /178** (43%)	
2021-22- EAS - Total Comments	**57/178** (32%)	
2022-23-Curriculum Improvement - Total Comments		**41/99** (41%)
2022-23- EAS - Total Comments		**26/99** (26%)
	n = 178, (76 + 57 +45)	n = 99 (41 + 26 +32)
Z score test, 2021-2022, CA vs EAS (**43%** vs **32%**), (two-tailed)	**Z = 2.08, p < .05**[d]	
Z score test, 2022-2023, CA vs EAS (**41%** vs **26%**), (two-tailed)		**Z = 2.25, p < .05**[d]

Note that not all gave open responses, some gave multiple responses to be coded. 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.

[a] **CA = Curriculum-improved Abilities – either Business Problem Solving, Presentation Skills, or Team-related Skills**

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

[c] **Not Curriculum Improvement or Employment Applicable Skills**

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

Table 6. Final Rubric of Categories - Most Valuable Part of Major Experience for Two Samples of Qualitative Majors

Prompt - **What do you believe has been the most valuable part of your major course experience?**

Category	2021-22 Qualitative Majors, n = 137	2022-23 Qualitative Majors, n = 68
Professors – e.g., caring; knowledgeable; real-world examples; fun; accessible; helpful; passionate; openness to learning from students; helping students to network/get internships; prompt feedback. **Not CA or EAS**[c]	n = 30 – not applicable	N = 13 – not applicable
Knowledge application to real world/bigger picture - e.g., real life scenarios; company-based projects; prepare for future, e.g., make presentations to potential employers; how to run a business (e.g., entrepreneur Marketing class); simulated Human Resource Information System; create/analyze data to make recommendations; running class like a business (Marketing, Business Administration1). **EAS**[b]	n = 20 (21%)	n = 18 (33%)
Course knowledge gained – e.g., learning wide variety of Human Resource facets; leadership; different marketing strategies; legal knowledge; global policies; consumer data analytics; quantitative skills; capstone integration. **CA**[a]	n = 11 (12%)	n = 7 (13%)
Course activities - e.g., group projects; learning how to work as a team; exams **CA**[a]	n = 8 (9%)	n = 5 (9%)
Class-improved abilities – e.g., critical thinking; becoming a better writer; making class presentations; participating in discussions, in-person or online. **CA**[a]	n = 5 (5%)	n = 3 (6%)
Professional development – e.g., Student Professional Organizations; meeting industry professionals; taking career preparation workshops; class guest speakers sharing work experiences; study abroad/learn new language; job search preparation; networking; how to grow own business. **EAS**[b]	n = 17 (18%)	n = 8 (15%)
Miscellaneous – e.g., online classes; recorded videos; getting into classes. **Not CA or EAS**[c]	n = 2 – not applicable	n = 1 – not applicable

2021-22-Curriculum Improvement (CA) - Total Comments	**24/93 = 26%**	
2021-22- EAS - Total Comments	**37/93 = 40%**	
2022-23-Curriculum Improvement (CA) - Total Comments		**15/55 = (27%)**
2022-23- EAS - Total Comments		**26/55 = (47%)**
	Total = 93 (24 + 37 + 32)	Total = 55 (15 + 26 + 14)
Z score test, 2021-2022, CA vs EAS (**26%** vs **40%**), (two-tailed)	**Z = -2.03, p < .05**[d]	
Z score test, 2022-2023, CA vs EAS (**27%** vs **47%**), (two-tailed)		**Z = -2.17, p < .05**[d]

Note that not all gave open responses, some gave multiple responses to be coded. Following Blau et al. (2016), *Qualitative majors* were represented by: Marketing, Business Management, Human Resource Management, International Business, Entrepreneurship, and Real Estate.

[a] **CA = Curriculum-improved Abilities – either Business Problem Solving, Presentation Skills, or Team-related Skills**

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

[c] **Not Curriculum Improvement or Employment Applicable Skills**

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

5. Discussion

One study contribution was confirming the validity of the three-scale 12-item CA structure (Blau & Drennan, 2022). This scale can be a useful tool to other researchers looking at the impact of their curricula, i.e., the perceived degree to which it improves their students' abilities. A literature review suggests this is the first empirical test of CA scales and EAS impact on differentiated samples of graduating business student quantitative and qualitative majors. Both CA scales and EAS are important. However, only BPS was perceived as uniquely contributing to the satisfaction of quantitative majors. Open item analysis showed that building models to solve problems, and learning coding were higher frequency CA categories for quantitative majors, which is consistent with prior research by Sankaran, Sankaran and Bui (2023). In addition, quantitative major course instructors should emphasize curriculum revision to keep it current with on-going business issues, applying financial models, using up-to-date analytical software, contemporary business case simulations, study groups, and professional examination preparation where relevant.

EAS made a unique contribution to qualitative majors' satisfaction. These results are supportive of prior research showing that preparation for a career (Tessema et al., 2012; Wiley, 2022) is important for satisfaction with major. In the open item analyses, these EAS-related issues were mentioned by qualitative majors, e.g., company-based projects, and meeting industry speakers. Thus, qualitative major course instructors should give their students' opportunities to get involved with student professional organizations (Marks et al. 2016), as well as making presentations to potential employers, both relevant to networking and job search preparation.

In other open-ended comments, both quantitative and qualitative majors recognized the value to their majors of working in teams and learning to collaborate. This finding is consistent with D'Souza, Bement and Cory (2022). Finding that both quantitative and qualitative majors recognized helpful, caring professors as contributing to their major satisfaction is consistent with Marks et al. (2016) and Tessema et al. (2012).

6. Study Strengths and Limitations and Future Research

Study strengths include having record-based data on demographic and school-related variables. Controlling these variables helps to rule out alternative explanations for the results found. This study was able to work with two distinct academic cohorts and analyzed an open item for follow-up on the regression results.

Perhaps the biggest study limitation was the low SSSS response rate. The high levels of CA scales, EAS, and satisfaction with major found may not be truly reflective of how graduating business seniors felt. These lower response rates necessitated working with aggregated categories of majors, i.e., quantitative and qualitative, since individual major sample sizes were too small; as well as a non-White race category. This also necessitated combining individual CA and EAS categories into more general categories to allow open item z-score

comparisons. Follow-up discussion with the SSSS administrators suggested several reasons for the low response rate, including, a voluntary survey, lingering Covid impact, and general student disengagement. Common method bias from the cross-sectional research design is also a limitation.

The wording of the open item did not allow responses to be coded into the specific CA or EAS scales. This is common when trying to match open qualitative to rating-based quantitative responses (Boysen, 2016). Ideally, the open response item should have mirrored the CA scale terminology more closely for stronger follow-up information. Additional item development of the EAS scale, perhaps using a focus group (Marks et al., 2016) should be considered. Despite precautions, e.g., a time lag between the separate coding of open items; intra-rater bias in coding must be acknowledged as contributing to measurement error (Johns & Miraglia, 2015). The SSSS is an exit survey relying on cumulative student perceptions of the scales studied, so it is subject to potential memory distortion. While overall GPA is a control for general student performance, it is not specific to the GPA within a student's major. No actual student performance data was collected on CA skills, or connection from EAS to subsequent employment.

Most important, in future research, is finding a way to increase the response rate of the SSSS, thus strengthening the validity of the results found. Different options to consider include making the SSSS mandatory as a graduation requirement and/or asking faculty, e.g., teaching senior-level capstone courses across majors to give in-class time to fill out the SSSS. 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 regions. Testing international business student samples could also be informative.

7. Conclusion

An exploratory study to understand variables influencing business student satisfaction with their majors, distinguishing between quantitative and qualitative majors, was done. Satisfaction with major is a critical component of student retention. This study reinforces the continued importance of curricula providing business problem solving skills and employment-related skills to enhance business student satisfaction with their majors.

References

Blau, G., & Drennan, R. (2022).Relationships of demographic and school related variables to curriculum improvement skill scales for graduating business students. *Journal of Education and Development, 6*(4), 37-43. https://doi.org/10.20849/jed.v6i4.1235

Blau, G., Pred, R., Drennan, R., & Kapanjie, D. (2016). Correlates of perceived favorability of online courses for quantitative versus qualitative undergraduate business majors. *Journal of Education for Business, 91*(8), 420-426. https://doi.org/10.1080/08832323.2016.1251389

Blau, G., Williams, W., Jarrell, S., & Nash, D. (2019). Exploring common correlates of business undergraduate satisfaction with their degree program versus expected employment. *Journal of Education for Business, 94*(1), 31-39. https://doi.org/10.1080/08832323.2018.1502144

Boysen, G. A. (2016). Using student evaluations to improve teaching: Evidence-based recommendations. *Scholarship of Teaching and Learning in Psychology, 2*(4), 273-284. https://doi.org/10.1037/stl0000069

D'Souza, D. E., Bement, D., & Cory, K. (2022) Cross-functional integration skills: Are business schools delivering what organizations need?. *Decision Sciences Journal of Innovative Education, 20*, 117-130. https://doi.org/10.1111/dsji.12262

Dawkins, M. C. (2023). Declining enrollments – A call to action! *Issues in Accounting Education, 38*(1), 9-18. https://doi.org/10.2308/ISSUES-2022-088

Ferns, S., Russell, L., & Smith, C. (2015). Designing work integrated learning to optimize student employment readiness. In T. Thomas, E. Levin, P. Dawson, K. Fraser, & R. Hadgraft (Eds.), *Research and Development in Higher Education: Learning for Life and Work in a Complex World* (Vol. 38, pp. 161-175, July 6-9).

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Johns, G., & Miraglia, M. (2015). The reliability, validity, and accuracy of self-reported absenteeism from work: A meta-analysis. *Journal of Occupational Health Psychology, 20*(1), 1-14. https://doi.org/10.1037/a0037754

Lewis, K. G. (2001). Making sense of student written comments. *New Directions for Teaching and Learning,*

87(1), 25-32. https://doi.org/10.1002/tl.25

Marks, B. M., Haug, J. C., & Huckabee, W. A. (2016). Understanding the factors that influence student satisfaction with the undergraduate business major. *Journal of Education for Business, 91*(5), 280-288. https://doi.org/10.1080/08832323.2016.1188757

Sankaran, S., Sankaran, K., & Bui, T. (2023). Student satisfaction with R vs. Excel in data mining and business analytics: A Herzberg's motivation-hygiene theory perspective. *Decision Sciences Journal of Innovative Education, 21*(1), 68-82.

SPSS. (2021). *Statistical package for the social sciences, version 28.* IBM: New York.

Stevens, J. (1996). *Applied multivariate statistics for the social sciences***.** Mahwah, NJ: Lawrence Erlbaum Associates.

Tessema, M., Ready, K., & Yu, W. (2012). Factors affecting college students' satisfaction with major curriculum: Evidence from nine years of data. *International Journal of Humanities and Social Science, 2*(2), 34-44. Retrieved from https://www.researchgate.net/publication/271077752

Wiley. (2022). The state of the student 2022. Retrieved from https://www-s3-live.kent.edu/s3fs-root/s3fs-public/file/the-state-of-the-student-2022.pdf?VersionId=jnLgHHhiwkBjX8kJMmzeMdMiRBw2al7f

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/4.0/).