Factors Associated with Student Performance in Business Finance: An Empirical Study at a US Private Residential College

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Of the motivation factors studied (intended grade, intention to take Professional Certification exams, and intention to attend graduate school), the first two are significantly associated with student performance. None of the distraction factors (job hours, job type, and course load) has any significant negative effect on student performance. All prior ability factors (grades in financial accounting and macroeconomics courses, and GPA) have significant association with the student performance. Finally, from the self-perceived ability factors (writing, math, reading, and listening), extra-curricular activities (internship, and participation in student organization,) and major, only math ability and major have significant association with student performance.

INTRODUCTION

Several prior studies have explored various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting courses, age, gender, motivation, effort, and other intervening variables) that are associated with student performance in college-level courses. It is widely believed that motivation and effort significantly influence individual performance in college. However, as the review of prior research below indicates, while most of these studies have focused on the introductory accounting and economics courses, very few studies have investigated their impact on the required undergraduate Business Finance (UBF) course. This study investigates the associations between selected motivation, distraction, self-perceived ability, and prior ability factors and student performance in the required UBF course offered at a private residential university in the U.S.

As proxies for motivation, we use the grade the students intend to earn in the course; intention to take professional certification examinations such as the Chartered Financial Analyst (CFA), the Certified Financial Planner (CFP), or the Certified Public Accountant (CPA); and intention to attend graduate school. As proxies for distraction, we use the number of hours the student works per week, the type of job (whether it is related to accounting, finance, or business in general), and the number of courses taken per

semester. We measure students' self-perceived abilities using their own self-reported math, writing, reading, and listening abilities. Students' prior abilities are measured by the actual grade earned in the Financial Accounting and Macroeconomics, which are pre-requisites for the Business Finance course, and by Overall Grade Point Average (OGPA). We also use students' participation in internship and their involvements in the student organizations as the measure of extra-curricular activities. The dependent variable, the student performance, is measured in two different ways: the letter grade and the total overall numerical grade (hereafter referred to as 'Points') received at the end of semester for the course.

One of the motivations for this study is to provide empirical evidence to the intuitive notion that motivation factors do indeed lead to better student performance and distraction factors harm student performance. Identifying factors that motivate students to perform well and factors that distract them from performing well may help emphasize the motivation factors and discourage the distraction factors. Another purpose of the study is to provide empirical evidence on whether students' self-assessment of their own writing, math, reading, and listening abilities affect their performance in the course. Finally, the impact of students' prior abilities and their current involvement with extra-curricular activities on student performance are analyzed.

The rest of paper continues as follows: section I presents the review of literature, section II explains the objective of the study, section III discusses variables and hypotheses, section IV provides the methodology, and section V presents the results. The paper ends with presentation of study conclusions, recommendations, limitations, and some suggestions for further research.

REVIEW OF PRIOR RESEARCH

Numerous Studies have examined the association between various factors (e.g., general academic performance, aptitude, prior exposure to mathematics, prior exposure to accounting, gender, age, motivation, effort, and other intervening variables) and student performance, proxied by Overall GPA (OGPA) in college-level courses. Most previous studies have been concerned with introductory accounting and economics course. This study, contributes to the existing literature by examining factors impacting students' performance measured by their final letter grade and the overall numerical grade earned using survey data from students taking in undergraduate Business Finance (UBF) course at a private residential university in the US.

The association between students' performance in introductory finance course and their OGPA have been studied by Paulsen and Gentry (1995); Chan et al. (1997); Sen et al. (1997); Didia and Hasnat (1998); Marks (1998); Van Ness et al. (2000); Johnson et al. (2002); Biktimirov and Klassen (2008); and Maksy and Rezvanian (2017). They find that the OGPA is a strong predictor of grade in the UBF course. Undergraduate Business Finance pre-requisites almost always include math and macroeconomics. Sen et al. (1997) find positive association between completion of pre-requisites and performance in the UBF course. Several other studies have investigated the impact of the students' prior exposure to mathematics and accounting courses on performance in UBF course and have reported mixed results. While Chan et al. (1997) show that self-reported quantitative skills have insignificant impact on students' course score, Grover et al. (2010) report significant explanatory power for pre-test math, accounting, and economics scores. Didia and Hasnat (1998) find mixed results, showing the math grade to be a significant predictor of course grade using an OLS model but not significant using an ordered-probit model. Similarly, Maksy and Rezvanian (2017) find a positive relationship between students self-perceived math ability and the UBF course grade under bivariate but not multivariate tests. Both of the above two studies find strong evidence that the student grade in the financial accounting pre-requisite course has predictive value for grades in the UBF course.

Prior studies about the influence of motivation and effort on student performance also report conflicting results. For example, Pascarella and Terenzini (1991), report that motivation and effort, among other factors, significantly influence students' performance in college. Paulsen and Gentry (1995) report that students' academic performance in a large introductory Financial Management course was significantly related to several motivational variables such as intrinsic and extrinsic goal orientations and

task value as well as learning strategy variables such as time, study, and effort. Johnson *et al.* (2002) utilize computerized quizzes and analyze the effect of objectively measured effort on student performance in a Financial Management course. They show that, after controlling for aptitude, ability, and gender, effort as measured by attempts and log time, remains significant in explaining the differences in performance. Rich (2006), uses students' homework preparedness and unpreparedness in class as a proxy for effort and non-effort. He finds significant positive association for the former and negative association for the latter with exam performance. Biktimirov and Klassen (2008) find weak association between course management system usage and performance in the introductory finance course. However, Didia and Hasnat (1998) presents evidence that the more time spent studying per week, the lower the grade in the Business Finance course. We believe that this counter intuitive evidence is because the authors did not control the students' prior abilities in their estimation. Maksy and Rezvanian (2017) find mixed results between student motivation and performance. Finally, using self-reported data, Nofsinger and Petry (1999) find no significant association between effort and performance in a principles of finance course.

In recent years, there has been increased interest in studying the influence of intervening variables on student performance. Paulsen and Gentry (1995) find that academic performance in a large introductory financial management class is significantly related to control over learning, test anxiety, self-efficacy, elaboration, organization and metacognition. Chan *et al.* (1997) find no significant relationship between performance in a financial management course and attendance, credit hours enrolled, and number of weekly work hours. In a similar vein, Van Ness *et al.* (2000) find no association between students' full time or part time status and grades in a principles of finance class. However, they find that students who are enrolled in an online class are less likely to complete the course. This appears to be contrary to Paulsen and Gentry (1995) finding because the online course is designed to give students more control over their learning in terms of very flexible deadline for assignments and one full year to complete the course. Maksy and Rezvanian (2017) report no significant negative effect of job hours, job type, or course load, on students' performance in an introductory business finance course. Didia and Hasnat (1998) find strong positive association between number of credit hours enrolled in the semester and course grades. This result may seem to be counter intuitive. However, some research, including this study, shows that students with higher GPAs take more courses per semester. Rich (2006) reports significant negative association between class absences and being late to the class, and exam performance. Age and gender are two demographic variables that receive less attention than those factors discussed above, but the results are still inconclusive. Chan *et al.* (1997), Didia and Hasnat (1998), and Van Ness *et al.* (2000) find no significant association between grade in a business finance course and gender or age of students. Henebry and Diamond (1998) and Johnson *et al.* (2002) find no significant association between gender and performance in a finance principles course. However, Henebry and Diamond (1998) show that both male and female students earn significantly higher grades in courses taught by female instructors. This difference was not attributable to adjunct, tenure track, or tenured status of instructors. Contrary to a study by Mutchler *et al.* (1987) that finds female students score significantly higher than male students, a study by Sen *et al.* (1997) shows that female student performed worse than male students in principles of finance courses at two different mid-western universities. Doran *et al.* (1991) report that male students perform better than female counterparts in introductory courses, and Lipe (1989) reports the same result but the relationship is not statistically significant.

There is very limited, almost non-existent, literature on the association between distraction factors and student performance. Maksy and Rezvanian (2017) find that distraction factors such as working, number of hours working, non-business work, and higher than average course load do not have negative impact on student performance. This finding is consistent with similar study done on introductory accounting courses.

As discussed above, prior research has been largely inconclusive. This study intends to provide more insights on those areas in which the results from prior studies offer conflicting conclusions. Since motivation and effort has generally been positively associated with student performance, we test whether some new selected motivation factors affect student performance in the UBF course. We also look at several factors that are commonly viewed as potentially distracting students and test whether they

negatively affect student performance. Finally, we investigate the impact of three specific measures of prior abilities on student performance and use them as control variables while testing for the relationship between motivation and distraction factors and student performance in the UBF course.

STUDY OBJECTIVES

The *first objective* of this research is to examine the relationship between three selected motivation factors (the grade the student intends to earn in the course, the student's intention to take professional certification exams, and the student's intention to attend graduate school), and the student's performance in the UBF course. We hypothesize that there are positive and significant relationships between those motivation factors and student performance. That is, students who intend to earn higher grades; take professional certification exams, such the Certified Financial Analyst (CFA), Certified Financial Planner (CFP), or Certified Public Accountant (CPA) exams; or intend to attend graduate school are motivated to perform well in the course to achieve their intentions.

The *second objective* is to study the association between three distraction factors (the student's number of working hours per week during the semester; the student's number of courses taken in the semester; and the student's job type, i.e., whether it is related to finance, accounting, or business in general) and the student's performance in the UBF course. Intuitively, the higher the number of work hours per week, the less time the student will have to study for the UBF course resulting in lower course grade and points. Furthermore, we hypothesize that the performance of a student taking higher number of courses will be affected negatively because the student may not be able to devote sufficient number of hours of study for the course. Finally, if the student's job is related to finance, accounting, or business in general, the student's grade in the UBF course will be higher than if the student's job is unrelated to one of these areas. In light of this discussion, we hypothesize that if the student's number of work hours per week is higher, and/or the number of courses taken in the semester is higher, and/or the student's job is not related to finance, accounting, or business in general, there will be a significant *negative* association between these distraction factors and the student's performance in the UBF course. Distraction factors may potentially offset each other thereby reducing the impact of any single factor. For example, a student who works more hours per week may take fewer courses, and vice versa, so there may be no net impact on performance. For this reason, we test the effect of each distraction factor on student performance while controlling for the other two factors. We also investigate the associations among the distraction factors themselves.

The *third objective* is to study the relationship between students' performance in the UBF course and their current self-perceived abilities in math, writing, reading, and listening. A positive association between self-reported abilities and performance may indicate that students make reasonably accurate assessment of their abilities. A lack of positive and significant association between certain abilities and performance could be interpreted as those abilities being irrelevant to the performance in the course or could indicate an inaccurate self-assessment of abilities. Before the students filled out the questionnaires, they were encouraged to be as honest as possible in their answers so future students could potentially benefit from the results of the research. Assuming controlled response bias, we hypothesize positive and significant associations between students' self-perceived abilities and their performance in the Business Finance course.

The *fourth objective* is to study the relationship between students' prior abilities such as their OGPA as well as grades in prerequisite courses (Principles of Financial Accounting and Macroeconomics) and student performance in the UBF. Since the topics covered in Financial Accounting and Macroeconomics are directly related to the topics covered in UBF, we hypothesize that there are positive and significant associations between these prior actual abilities and student performance in the UBF course.

The *fifth objective* is to study the association between students' extra-curricular activities (such as involvement with student organizations), internship participation, and academic major (accounting, finance, management, marketing, or other) and their performance in the UBF course. We hypothesize that students who participate in extra-curricular activities or internships will perform better in the UBF course

than students who do not participate. Participation in extra-curricular activities may provide students with peer interaction opportunities and help them to develop a sense of responsibility and belonging that could positively impact their academic performance. We also hypothesize that students majoring in Finance or Accounting will perform better in the UBF course than students majoring in other fields in business because topics covered in accounting and finance courses are more directly related to the topics covered in the UBF course.

STUDY VARIABLES AND HYPOTHESES

Study Variables

In addition to the 16 independent variables described above, we use two dependent variables. Initially, we used only the letter grade in the course (A, A$^-$, B$^+$, etc.) as the student performance measure as a dependent variable. However, we realized that the letter grade treats a student earning the lowest end of the grade range as having the same exact performance as that of a student earning the highest end of the grade range. For example, student with a total percentage points of 80 and another with a total percentage points of 83 would be considered having equal performance since both students receive a letter grade of B for the course, even though the first student is one percentage point away from a C$^+$ grade and the other student is one percentage point away from a B$^+$ grade. As a result, in addition to letter grade, we also decided to use overall points percentage earned by a student without any curve in the course as a dependent variable.

Study Hypotheses

The study tests one hypothesis for each of the sixteen independent variables classified under five categories of factors; Motivation, Distraction, Self-perceived Abilities, Prior Abilities, and Other factors. The formal statements of all 16 hypotheses classified under four categories are presented in APPENDIX A. To prevent redundancy, each hypothesis is presented in the alternate form only.

RESEARCH METHODOLOGY

Survey Instrument

We modified a list of survey questions, from Ingram *et al.* (2002), to include study variables, demographics, and other information. For ethical, confidentiality, and potential risk issues pertaining to participants, the authors had to submit a comprehensive application (together with a copy of the survey instrument) to their respective Schools' Institutional Review Board (IRB) for approval. Prior to that, authors monitoring the questionnaire process had to take the National Institute of Health (NIH)'s training course titled 'Protecting Human Research Participants,' and pass the test given at the end of the course. The certificates of completion of the course were required to be submitted with the application to each schools' IRB.

Study Sample

In fall 2017, we collected the data on the survey instrument from 101 of 115 students enrolled in the several sections of the undergraduate Business Finance course offered at a US private college. The college enrolls approximately 6,800 students, and the School of Business enrolls approximately 750 students. The instructors teaching different sections of the course provided data representing the two dependent variables (the 'letter grade,' and 'overall points' before any curving). Performance data was matched with survey responses using only student ID numbers for confidentiality purposes.

Two different graduate students entered the data from the questionnaires on two separate Excel spreadsheets. The authors matched the two spread sheets and resolved any discrepancy by referring to the original questionnaires. This virtually eliminated any data entry errors.

Table 1 presents descriptive statistics (minimum, maximum, mean, and standard deviation) of all variables used in the study. It is interesting to note that the mean of Intended Grade of 3.72 is higher than

the mean of the Letter Grade of 3.20 earned in the course. It is also higher than the mean of each of the prior ability factors (the grade in Macroeconomics, the grade in Financial Accounting, and overall GPA) that have means of 3.39, 3.25, and 3.37 respectively. It is even higher than the mean of each of the self-perceived ability factors (Writing, Math, Reading, and Listening) that have means of 3.10, 3.13, 3.03, and 3.33 respectively.

Data Analysis

To test the formulated hypotheses in APPENDIX A, we use one-way analysis of variance (ANOVA), Pearson and Spearman's correlation coefficients and ordinary least square linear (OLS) regressions.

STUDY RESULTS

The analysis of the statistical results of the association between student performance and the five categories of independent factors; Motivation, Distraction, Self-perceived Abilities, Prior Abilities, and Other factors are presented in the following five sections.

Motivation Factors Associated with Student Performance

The results of association between student performance and the three motivation variables as discussed in H_1 to H_3 are presented in Table 2 and Table 3. The results show the grade students intend to earn in the course (Int. Grade) and the student's intention to take professional certification exams (Prof. Cert.) are significantly associated with student performance based on One-Way ANOVA, and Pearson and Spearman's Correlation Coefficients at the .01 level of significance. The only exception to this is that when student performance dependent variable is the letter grade (Grade), the association between Prof. Cert. and student performance is only significant using ANOVA. Table 4 presents the results after controlling for prior ability, as measured by the grades earned in the pre-requisite Principles of Macroeconomics and Financial Accounting courses as well as OGPA. The results indicate that the association of between Int. Grade and student performance is positive but only at the .05 significance level. The regression test results provided in Table 5 also show a significant association between Int. Grade and student performance. However, the regression test does not show any significant association between Prof. Cert and student performance defined as Grade but shows significant association between Prof. Cert and student performance defined as Points. When we regress only motivation variables on student performance as shown in Table 6, we find a significant association between Int. Grade and Prof. Cert and student performance. Next, we include the prior ability variables (the grades in Macroeconomics and Financial Accounting as well as OGPA) in the regression model together with the motivation factors. The results in Table 6A show a significant association between Int. Grade and Prof. Cert. and student performance (however defined). This is a strong indication that Int. Grade and Prof. Cert have distinct motivation effect on student performance over and above prior ability factors particularly OGPA. This positive association is similar to the findings of Gupta and Maksy (2014) who evaluate student performance in an Investments course, but contradicts the findings of Maksy and Rezvanian (2017) who evaluate student performance in a Financial Management course. The third motivation variable in this study (intention to attend graduate school) is not significantly associated with student performance. This result is consistent with the findings of the above two studies.

Distraction Factors Associated with Student Performance

Tables 2, 3, 4 and 7 show that none of the three distraction factors (Job Hours, Job Type, and Course Load) has any significant association with student performance under any tests. An exception to this is that there is a significant association between Course Load and student performance, but only with the ANOVA test at the .10 significance level. With the ANOVA test limitations, we cannot conclude if the association is negative or positive. Since only one out of four tests shows a significant association and since the significance level is low, it is likely that this exception is a statistical anomaly. Therefore, we conclude that none of the three distraction factors is negatively related to student performance. Even when

we regress only distraction variables on student performance, as shown in Table 7, we find no significant association between any of the three distraction factors and student performance. Next, we included the prior ability variables (the grades in Macroeconomics and Financial Accounting as well as OGPA) in the regression model together with the distraction factors. The results in Table 7A show no significant association between any distraction variables and student performance. The results are consistent with Chan et al. (1997), Wooten (1998), and Gupta and Maksy (2014), who find that work hours do not affect student performance, and with Maksy and Rezvanian (2017) who find that work hours, Job Type, and Course Load does not affect student performance in a commuter school. Panels A and B of Table 11, present partial correlation coefficients of selected distraction factors (while controlling the other two factors) with and without prior actual ability factors. The results show that none of the coefficients is statistically significant indicating that the distraction factors have no effect on the student performance. These results are also consistent with the results reported by Gupta and Maksy (2014).

Self-perceived Abilities Factors Associated with Student Performance

Tables 2 and 3 show that, of the four self-perceived ability factors (Writing, Math, Reading, and Listening), only Math has significant association with student performance (however defined) using both ANOVA and Pearson and Spearman Correlation Tests. However, after controlling for the prior ability factors as provided in Table 4, these associations still exist but are weakened. The regression results in Table 5 confirm a significant association between perceived math ability and student performance but only when "points" are used as the dependent variable. There is also a significant association between writing ability and student performance (defined as points) using ANOVA and Pearson and Spearman Correlation tests. However, when we control for the prior ability factors, all the significant association disappears. Table 5 shows regression results that support the conclusion that there are no significant association between writing ability and student performance. For the remaining prior ability factors (Reading and Listening abilities), we find no significant relationship between self-perceived ability factors and student performance using any test.

Next, we performed regression analyses using only self-perceived ability factors as independent variables to explain student performance. The results presented in Table 8 show a significant association only between self-perceived math ability and student performance. The regression analyses show no significant association between student performance and self-perceived ability in writing, reading or listening. Finally, Table 8A shows consistent results even when prior ability variables (the grades in Macroeconomics and Financial Accounting and OGPA) in the regression model as independent explanatory variables together with the self-perceived ability factors.

In summary, there is a strong association between self-perceived math ability and student performance, a weak association between self-perceived writing ability and student performance, and no significant association between self-perceived reading or listening abilities and student performance. These results are different from the findings in Didia and Hasnat (1998) and Grover et al. (2010), but generally consistent with the results reported by Gupta and Maksy (2014) and Maksy and Rezvanian (2017).

Prior Actual Ability (Control) Factors Associated with Student Performance

The results of association between student performance and the three factors in the "Prior Ability" category of independent variables (grades in Financial Accounting and Macroeconomics, and OGPA) using ANOVA and Pearson Spearman tests are presented in Tables 2 and 3 respectively. The results from both tests indicate a positive and statistically significant association between student performance in UBF and their prior performance in Financial Accounting and Macroeconomics courses as well as their overall academic performance using OGPA. The regression tests presented in Table 5 shows significant association between student performance and their OGPA, but not with their grades in Financial Accounting or Macroeconomics.

Other Factors Associated with Student Performance

The results from ANOVA Test as presented in Table 2, shows that of the three "other factors" (Extra-Curricular Activities, Internship, and Major), there is a significant association between Major and student performance but no significant association between either Extra-Curricular Activities or Internship and student performance. The Pearson Correlation Test results presented in Table 3, also indicates that this association is significant only when performance is defined numerically with "Points." When we control for the prior ability factors, the Pearson Correlation Test as presented in Table 4, still indicates a significant association only between Major and student performance defined numerically with "Points." Table 5 regression results show no significant association between Major and student performance (however defined). However, when we model only "other factors" on student performance, as shown regression results presented in Table 9, we find a significant association only between Major and student performance. Next, we include the prior ability variables (the grades in Macroeconomics and Financial Accounting as well as OGPA) in the regression model together with the "other factors" variables. The results are shown in Table 9A where the coefficients for the Major remain statistically significant, while the coefficients of OGPA also become significant.

CONCLUSIONS AND RECOMMENDATIONS

There are several important conclusions can be drawn from the results of this study. The *first* conclusion is that motivated students, when motivation is proxied by intended grade and intention to sit for professional certification exams, perform better than non-motivated students. Interestingly, as Table 1 shows, the average Intended Grade of 3.72/4.00 reported by students at the beginning of the course was significantly higher than the actual average grade of 3.20/4.00 earned by students. This simply implies that at the beginning of the courses, students are already motivated to do well in the course. At the same time, promoting and facilitating students' intention to take professional certificates exams, not only improve students' future career opportunities, but also potentially motivate students to do better in UBF course. A suggested strategy for finance faculty hoping to improve student performance in their UBF course may be to promote the value of professional certificate exams and encourage students to pursue these designations. Since we could not find any association between intention to attend graduate school and student performance, it is unlikely that encouraging students to pursue graduate studies would result in motivating students to increase the time and effort to improve performance in the UBF course.

The *second* conclusion drawn from the statistical results of this study is that the activities that faculty may consider distractions (proxied by variables including number of hours of work per week, working in non-finance, non-accounting, or non-business-related jobs, and number of courses taken in the semester) do not seem to keep students from earning higher grades in the UBF course. These results contradict the common believe that studying full-time and working part-time may harm student performance. Therefore, when advising students with poor performance, the advisors should consider causes other than employment status and course load.

The *third* conclusion of the study is that, other than math, students' estimate of their own current perceived abilities (e.g., writing, reading and listening) have no significant association with students' performance in the UBF course. Although this study does not confirm the positive association between student performance in UBF course and their current perceived abilities in writing, reading and listening, we believe that having soft skills are important factors for overall career development and the future success of business student. This has been documented in many of other previous studies. Therefore, we suggest that faculty and schools of business academic advisors to emphasize the importance of students Math skill as an important pre-requisite for UBF course and high level of soft skills for their future career development.

The *fourth* conclusion of the study is that students' prior actual ability, measured by higher grade received on prerequisite courses such as Financial Accounting and Macroeconomics, and their OGPA, are strong predictors of performance in the Business Finance course. In light of this conclusion, we recommend that college of business faculty and advisors should highlight the importance of pre-requisite

courses, such as Math, Financial Accounting, and Macroeconomics to their advisees, and enforce the pre-requisite requirements for the UBF course.

The *fifth* conclusion of the study is about students' participation in extra-curricular activities, internship, and their selected majors. Contrary to our expectation, this study shows that students' performance in UBF course are not associated with their involvement in extra-curricular and internship activities. This result should be considered cautiously. We recommend that the college of business faculty in general, and finance faculty in particular, should remind their advisees that although participation in extra-curricular and internship activities may not contribute to their performance in UBF course, but these activities are necessary for their future career developments. Therefore, students' participation in extra-curricular and internship activities shouldn't be considered as a substitute to their academic learning experience, rather they should be considered as compliment to each other.

Contrary to the above, there is a strong positive association between students' performance in UBF and their majors, especially students majoring in accounting and finance. Many business students who are not majoring in accounting or finance are under a wrong impression that financial management course may not benefit them in their future career, therefore, they may not consider this course as important as the students majoring in accounting and finance. We believe that UBF course is one of the important business functional courses and is equally important to all majors in business.

STUDY LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This study is subject to some limitations. One of the limitations of this study is that the school under this study is a private residential college with a few transfers and part time students. Therefore, the conclusions drawn from this study may not be applicable to commuter schools with higher percentage of part time, transfers, and returning students. Another limitation of the study is that the study sample size may not be large enough relative to the number of independent variables analyzed and, hence, the results should be considered cautiously.

ENDNOTES

1. In this study we review the existing literature on the factors associated with student performance only in the undergraduate Business Finance course. For the review of literature on the factors associated with student performance in other business courses such as accounting and economics, please refer to Maksy and Rezvanian (2017).

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APPENDIX A

STUDY FORMAL STATEMENTS OF HYPOTHESES

Motivation Factors

H_1: There is a significant positive association between the grade the student intends to earn in the Business Finance course and student performance in that course.

H_2: There is a significant positive association between the student's intention to take Professional Certification Exams and student performance in the Business Finance course.

H_3: There is a significant positive association between the student's intention to attend graduate school and student performance in the Business Finance course.

Distraction Factors

H_4: There is a significant negative association between the student's average number of hours of work per week and student performance in the Business Finance course.

H_5: There is a significant negative association between the student's job type (if it is not related to finance, investment, accounting, or business in general) and student performance in the Business Finance course.

H_6: There is a significant negative association between the number of semester courses a student is taking and that student's performance in the Business Finance course.

Self-Perceived Ability Factors

H_7: There is a significant positive association between the student's self-reported writing ability and student performance in the Business Finance course.

H_8: There is a significant positive association between the student's self-reported math ability and student performance in the Business Finance course.

H_9: There is a significant positive association between the student's self-reported reading ability and student performance in the Business Finance course.

H_{10}: There is a significant positive association between the student's self-reported listening ability and student performance in the Business Finance course.

Prior Ability (and Control) Factors

H_{11}: There is a significant positive association between the grade the student earned in the Financial Accounting course and student performance in the Business Finance course.

H_{12}: There is a significant positive association between the grade the student earned in the Principles of Macro Economics course and student performance in the Business Finance course.

H_{13}: There is a significant positive association between the student's overall GPA and student performance in the Business Finance course.

Other Factors

H_{14}: There is a significant positive association between Extra-Curricular activities and student performance in the Business Finance course.

H_{15}: There is a significant positive association between Internship and student performance in the Business Finance course.

H_{16}: There is a significant positive association between Major and student performance in the Business Finance course.

TABLE 1

DESCRIPTIVE STATISTICS FOR THE STUDY NON-BINARY VARIABLES

	N	Minimum	Maximum	Mean	Std. Deviation
Letter Grade[1]	101	1	4	3.20	0.807
Overall Points	101	64	100	87.27	9.048
Intended Grade[1]	101	2.33	4	3.72	0.404
Professional Certification[2]	101	0	2	0.84	0.903
Graduate School[2]	101	0	2	1.44	0.699
Job Hours	101	0	50	10.15	12.919
Job Type[3]	101	0	3	0.98	0.990
Course Load	101	3	8	5.37	0.723
Writing Ability[4]	101	2	4	3.10	0.686
Math Ability[4]	101	1	4	3.13	0.796
Reading Ability[4]	101	1	4	3.03	0.780
Listening Ability[4]	101	1	4	3.33	0.665
ECO 121 Grade[1]	101	1.67	4	3.39	0.586
ACC 225 Grade[1]	101	1.33	4	3.25	0.702
OGPA (out of 4.00)	101	2.03	4	3.37	0.405
Extra-Curricular Activities	101	0	3	1.61	1.010
Internship	101	0	1	0.56	0.498
Major	101	1	5	3.66	1.275

[1] A = 4; A- =3.67; B+ = 3.33; B = 3; B- = 2.67; C+ = 2.33; C = 2; C- = 1.67; D+ = 1.33; D = 1; D- = .67; F = 0

[2] Yes = 2; Maybe = 1; No = 0

[3] Accounting or Finance related = 3; Business related = 2; Other = 1; Do not work = 0

[4] Very Good =4; Good =3; Average =2; Poor =1

<div align="center">

TABLE 2
ONE-WAY ANALYSIS OF VARIANCE
(All numbers are for Between Groups Only)

</div>

		Dependent Variables			
		Letter Grade		Overall Points %	
Independent Variables	**DF**	**F Value**	**Sig.**	**F Value**	**Sig.**
Intended Grade	4/100	8.141	0.000***	7.904	0.000***
Prof. Cert	6/100	2.682	0.019**	3.069	0.009***
Grad School	3/100	0.571	0.636	0.731	0.536
Job Hours	20/100	1.055	0.412	1.198	0.279
Job Type	3/100	0.415	0.743	0.575	0.633
C Load	6/100	1.891	0.090*	1.848	0.098*
Write	2/100	2.330	0.103	2.425	0.094*
Math	3/100	5.859	0.001***	6.956	0.000***
Read	3/100	0.978	0.406	0.547	0.652
Listen	3/100	1.770	0.158	2.001	0.119
ECO 121	7/100	3.758	0.001***	3.587	0.002***
ACC 225	8/100	4.551	0.000***	4.426	0.000***
OGPA	46/100	2.612	0.000***	2.556	0.001***
Extra C.A.	3/100	1.776	0.157	1.714	0.169
Internship	1/100	0.504	0.480	0.463	0.498
Major	4/93	2.444	0.052*	2.747	0.033**

*Significant at 10% level of significance using two tails test

**Significant at 5% level of significance using two tails test

***Significant at 1% level of significance using two tails test

TABLE 3
PEARSON AND SPEARMAN CORRELATIONS [a]

	Letter Grade	Points	Intended Grade	PRO CERT	Grad School	Job Hours	Job Type	Course Load	Write	Math	Read	Listen	Eco 121	ACC 225	OGPA	Extra C.A.	Internship	Major
Letter Gr	1	.983***	.454***	.308***	.068	-.020	-.041	.008	.211**	.374***	.154	.063	.015	.071	.174*	.416***	.429***	.574**
Points	.978***	1	.449***	.330**	.081	-.020	-.017	.005	.208**	.410***	.125	.053	.010	.068	.220**	.415***	.434**	.584**
Int. Grade	.469***	.452***	1	.299***	.270***	-.013	.011	.065	.269***	.216***	.154	.217**	.185*	.023	.176*	.273***	.493***	.482**
Prof. Cert	.308***	.331***	.280**	1	.374**	.016	-.003	.134	-.057	.236*	.154	-.067	.030	-.311**	.422**	.044	.253*	.160
Grad Sch.	.093	.114	.253**	.380***	1	.003	.053	.129	.068	.120	.149	.141	.077	-.134	.247**	.029	.082	.044
Job Hours	-.072	-.049	-.065	-.039	.073	1	.535***	.082	-.059	-.035	.024	.068	.017	.075	-.033	-.159	.021	-.019
Job Type	-.058	-.039	-.018	-.033	.065	.751***	1	.059	.062	-.098	.117	.071	.152	.185*	-.006	.008	.117	.096
C Load	.097	.085	.048	.177*	.174*	.084	.049	1	-.004	.038	.149	-.016	.185*	-.129	.102	.061	.122	.169
Write	.170*	.169*	.247**	-.076	.030	.056	.068	-.016	1	.086	.424***	.235**	.215**	.186*	.025	.201**	.226**	.416***
Math	.370***	.398***	.179*	.212**	.152	-.083	-.129	.079	.068	1	-.151	.014	.062	.067	.126	.205**	.205**	.374***
Read	.095	.084	.103	.134	.130	.073	.118	.159	.422***	-.126	1	.405***	.078	-.095	.053	.040	.017	.087
Listen	-.009	-.022	.167*	-.106	.112	.098	.140	-.043	.203**	-.067	.428***	1	.130	.072	-.027	.087	.075	.127
ECO 121	.461***	.443***	.261**	.076	.088	-.078	-.027	.065	.192*	.180*	.070	.024	1	.480***	.614***	.149	.039	.109
ACC 225	.417***	.412***	.486***	.249**	.143	.040	.079	.135	.203**	.206**	.000	.051	.435***	1	.696***	.012	.063	.064
OGPA	.561***	.557***	.449***	.100	.043	.122	.128	.166*	.378***	.345***	.081	.078	.570***	.660***	1	.152	.172*	.071
Extra C.A.	.011	.008	.151	.049	.105	.105	.144	.195*	.215**	.067	.082	.131	.191	.066	.231**	1	.159	.077
Internship	.028	.024	.144	-.324***	-.104	.151	.196*	-.140	.190*	.066	-.094	.078	.067	.064	.139	.167*	1	-.208**
Major	.155	.198*	.164	.414***	.225**	-.034	-.035	.063	.072	.096	.069	-.028	.077	.040	.075	.082	-.196*	1

a Pearson correlations are above the diagonal and Spearman correlations are below the diagonal.

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 4
PEARSON PARTIAL CORRELATION COEFFICIENTS
(CONTROLLING FOR ECO 121, ACC 225, AND OGPA)

	Letter Grade	Points	Intended Grade	PRO CERT	Grad School	Job Hours	Job Type	Course Load	Write	Math	Read	Listen	Extra C.A.	Intern ship	Major
Letter Grade	1														
Points	.976***	1													
Int. Grade	.251**	.244**	1												
Prof. Cert	.282***	.316***	.235**	1											
Grad Sch.	.030	.044	.304***	.357***	1										
Job Hours	.003	-.008	-.012	-.002	-.020	1									
Job Type	-.122	-.099	-.046	-.064	.009	.529***	1								
C Load	-.116	-.123	-.016	.098	.099	.071	.019	1							
Write	-.029	-.037	.097	-.087	.079	-.055	.055	-.078	1						
Math	.212**	.249**	.070	.199*	.088	-.051	-.162	-.030	-.071	1					
Read	.134	.094	.134	.203*	.149	.028	.131	.147	.405***	.214**	1				
Listen	.005	-.012	.195*	-.049	.198*	.073	.081	-.012	.190*	-.018	.404***	1			
Extra-C.A.	-.152	-.151	.132	.066	.172	.070	.182*	.163	.133	.011	.071	.100	1		
Internship	.005	-.003	-.045	-.306***	-.122	.069	.191*	-.163	.109	.048	-.146	.019	.110	1	
Major	.159	.217**	.173	.430***	.248**	-.023	-.010	.094	-.003	.107	.050	-.037	.056	.217**	1

a Pearson correlations are above the diagonal and Spearman correlations are below the diagonal.

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 5
REGRESSION ANALYSIS: ALL STUDY VARIABLE AND STUDENT PERFORMANCE
<u>(All numbers are for 101 Observations)</u>

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-1.726	0.088*	3.525	0.001***
Int. Grade	2.029	0.046*	1.901	0.061*
Prof. Cert.	1.487	0.141	1.724	0.089*
Grad Sch.	-0.847	0.399	-0.868	0.388
Job Hours	0.752	0.454	0.445	0.658
Job Type	-1.066	0.290	-0.604	0.548
C Load	-1.176	0.243	-1.209	0.230
Write	-0.755	0.441	-0.638	0526
Math	1.658	0.101	1.900	0.061*
Read	1.834	0.071*	1.398	0.166
Listen	-0.590	0.557	-0.510	0.612
ECO 121	1.212	0.229	1.019	0.312
ACC 225	-0.435	0.665	-0.422	0.674
OGPA	2.768	0.007***	2.860	0.005***
Extra C.A.	-1.497	0.138	-1.575	0.119
Internship	1.204	0.232	1.122	0.265
Major	0.710	0.480	1.141	0.258
Adj. R2	0.389		0.408	
F	4.704	.000***	5.012	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 6
REGRESSION ANALYSIS:
MOTIVATION FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	0.180	0.858	7.121	0.000***
Int. Grade	4.484	0.000***	4.356	0.000***
Prof. Cert.	2.395	0.019**	2.628	0.000***
Grad Sch.	-1.378	0.171	-1.288	0.201
Adj. R^2	0.229		0.233	
F	10.920	0.000***	11.131	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 6A
REGRESSION ANALYSIS: MOTIVATION FACTORS TOGETHER WITH
PRIOR ABILITY FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-2.164	0.033**	4.501	0.000***
Int. Grade	2.192	0.031**	2.007	0.048**
Prof. Cert.	2.555	0.012**	2.824	0.006***
Grad Sch.	-1.037	0.303	-0.921	0.359
ECO 121	1.347	0.181	1.258	0.212
ACC 225	-0.661	0.510	-0.699	0.486
OGPA	3.251	0.002***	3.481	0.001***
Adj. R^2	0.382		0.396	
F	11.295	0.000***	11.909	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 7
REGRESSION ANALYSIS: DISTRACTION FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	5.159	0.000***	12.613	0.000***
Job Hours	0.010	0.992	-0.127	0.899
Job Type	-0.351	0.726	-0.079	0.937
C Load	0.100	0.921	0.062	0.950
Adj. R^2	-0.029		-0.030	
F	0.058	0.982	0.016	0.997

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 7A
REGRESSION ANALYSIS: DISTRACTION FACTORS TOGETHER WITH PRIOR ABILITY FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-0.379	0.706	6.077	0.000***
Job Hours	0.841	0.403	0.663	0.509
Job Type	-1.382	0.170	-1.057	0.293
C Load	-1.057	0.293	-1.125	0.264
ECO 121	0.929	0.355	0.808	0.421
ACC 225	0.467	0.641	0.431	0.667
OGPA	3.892	0.000***	4.045	0.000***
Adj. R^2	0.317		0.322	
F	8.735	0.000***	8.916	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 8
REGRESSION ANALYSIS: SELF-PERCEIVED ABILITY FACTORS
AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	2.135	0.035**	10.694	0.000***
Write	1.052	0.296	1.133	0.260
Math	4.182	0.000***	4.571	0.000***
Read	1.684	0.096*	1.449	0.151
Listen	-0.434	0.666	-0.439	0.662
Adj. R^2	0.163		0.183	
F	5.857	0.000***	6.606	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 8A
REGRESSION ANALYSIS: SELF-PERCEIVED ABILITY TOGETHER WITH PRIOR
ABILITY FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-1.652	0.102	5.696	0.000***
Write	-0.896	0.372	-0.828	0.410
Math	2.585	0.011**	2.986	0.004***
Read	2.226	0.028**	1.962	0.053*
Listen	-0.820	0.414	-0.826	0.411
ECO 121	0.997	0.321	0.907	0.367
ACC 225	0.663	0.509	0.666	0.507
OGPA	2.835	0.006***	2.895	0.005***
Adj. R^2	0.356		0.372	
F	8.895	0.000***	9.477	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 9
REGRESSION ANALYSIS: OTHER FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	8.397	0.000***	23.002	0.000***
Extra C.A.	-0.096	0.923	-0.112	0.911
Internship	1.025	0.308	1.078	0.284
Major	1.866	0.065*	2.329	0.022**
Adj. R^2	0.01		0.029	
F	1.298	0.28	1.936	0.129

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 9A
REGRESSION ANALYSIS: OTHER FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-1.607	0.112	5.745	0.000***
Extra C.A.	-1.609	0.112	-1.655	0.102
Internship	0.592	0.555	0.643	0.522
Major	1.705	0.092*	2.278	0.025**
ECO 121	0.845	0.400	0.674	0.502
ACC 225	0.151	0.880	0.195	0.846
OGPA	3.799	0.000***	3.985	0.000***
Adj. R^2	0.322		0.348	
F	8.374	0.000***	9.269	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 10
REGRESSION ANALYSIS: PRIOR ABILITY FACTORS AND STUDENT PERFORMANCE
(All numbers are for 101 Observations)

Independent Variables	Dependent Variables			
	Letter Grade		Overall Points %	
	t Coeff.	Sig.	t Coeff.	Sig.
Constant	-1.160	0.249	6.778	0.000***
ECO 121	0.929	0.355	0.826	0.411
ACC 225	0.394	0.694	0.374	0.709
OGPA	3.753	0.000***	3.922	0.000***
Adj. R^2	0.317		0.326	
F	16.458	0.000***	17.150	0.000***

*Significant at 10% level of significance using two tails test
**Significant at 5% level of significance using two tails test
***Significant at 1% level of significance using two tails test

TABLE 11
PARTIAL CORRELATION COEFFICIENTS OF SELECTED DISTRACTION FACTORS WITH STUDENT PERFORMANCE[a]

Panel A

Dependent Variable	Letter Grade		Points	
Distraction Factor	*Coef.*	*Sig.*	*Coef.*	*Sig.*
Job Hours	.001	.992	-.013	.899
Job Type	-.036	.726	-.008	.937
Course Load	.010	.921	.006	.950

Panel B

Dependent Variable	Letter Grade		Points	
Distraction Factor	*Coef.*	*Sig.*	*Coef.*	*Sig.*
Job Hours	.086	.403	.068	.509
Job Type	-.141	.170	-.108	.293
Course Load	-.108	.293	-.115	.264

a Panel A: While controlling for the other two distraction factors.
Panel B: *While controlling for the other two distraction factors and prior actual ability factors (ECO 121, ACC 225 & OGPA)*