 ISSN: 2473-3857
v5 n4939

Academic Entitlement Beliefs of Information Systems Students: A Comparison with Other Business Majors and An Exploration of Key Demographic Variables and Outcomes

Scott J. Seipel
scott.seipel@mtsu.edu

Nita G. Brooks.
nita.brooks@mtsu.edu

Information Systems and Analytics
Middle Tennessee State University
Murfreesboro, TN

Abstract

Academic entitlement has received much attention in both academic and practitioner outlets. It is defined as "the tendency to possess an expectation of academic success without taking personal responsibility for achieving that success" (Chowning & Campbell, 2009 p. 982). The concept evolved from research in the area of generalized entitlement and narcissism resulting in a context-specific measure useful in understanding entitlement beliefs specific to educational environments. The overall goal of this research is to provide an introductory understanding of entitlement beliefs among information systems students and subsequently compare them to the greater population of students in a business college. Data was collected from 529 undergraduate students at a public university in the southeastern United States. A series of nested models were analyzed to better understand the overall structure of the construct and determine the extent of differences in the two populations. Additional demographic factors were examined including age, gender, employment status, and self-reported GPA (overall and within major). For the sample examined in the current study, findings indicated undergraduate information systems students are quite similar in their entitlement beliefs when compared to students in the other disciplines. Additionally, within-major GPA was found to be significantly related academic entitlement among both populations. A discussion of the findings is provided along with general recommendations for future research.

Keywords: academic entitlement; information systems students; student outcomes

1. INTRODUCTION

Over the past several years, there has been an increased focus on the view that the current generation of students feels more entitled to a college degree. This concept is referred to and operationalized as academic entitlement. It is defined as "the tendency to possess an expectation of academic success without taking personal responsibility for achieving that success" (Chowning & Campbell, 2009 p. 982).

Academic entitlement has been tied directly to a concept called consumerism. Sohr-Preston and Bosweel (2015) provided that in the context of higher education, consumerism represents a student's perspective that they are "paying customers for their education and deserve the same customer satisfaction and service as any

ISSN: 2473-3857
v5 n4939

other type of consumer" (p. 183). Essentially, this results in an exchange; the result of paying tuition is a degree and good GPA.

One of the driving goals in higher education environments remains the desire to understand students to more effectively promote and ensure learning and to guide them to successful completion of a degree. Understanding academic entitlement provides a means to help meet that goal.

The primary focus of this paper is to examine academic entitlement in undergraduate information systems students. Discipline specific studies are useful for many reasons. First, they help the discipline better understand its members, and second, they provide a frame of reference against which others can compare. Demographic factors are examined as well to determine where differences might exist. Specifically, factors included were gender, age, employment, major, and overall and within major GPA.

The following section presents a sample of literature that touches on the areas of generalized or psychological entitlement as well as academic entitlement with the primary focus being given to academic entitlement. The methodology, analysis, and results sections follow outlining the examination of academic entitlement for this sample. The paper then provides a discussion followed by directions for future research.

2. LITERATURE REVIEW

There have been several studies examining the notion of entitlement and closely related concepts such as the self-concept and self-esteem (Sohr-Preston and Boswell, 2015). Research focused on the organizational environment has highlighted entitlement as important due to the challenges it creates for managing today's workforce (Tomlinson, 2013).

Generalized or psychological entitlement has been studied in a variety of research domains. The concept of entitlement has been found in the literature as both a trait-like and state-like construct. Trait entitlement is defined as "a global sense of the privileges that is stable across time" (Tomlinson, 2013 p. 72). Specific contexts have also been examined in relation to entitlement. For example, research has been conducted examining entitlement related to the legal system, philosophy, political science, sociology, and other areas (Tomlinson, 2013). It represents the sense that individuals "ought to obtain a certain outcome" (Kopp, Zinn, Finney, & Jurich, 2011) or a general belief about what an individual deserves (Anderson, Halberstadt, & Aitken, 2013). Generalized entitlement is associated with narcissism and inflated views of the self-concept.

Specifically, the importance of entitlement and understanding the role it plays in general is highlighted by the negative behaviors associated with it in previous research. Campbell, et al. (2004) noted in their study aimed at developing a construct to measure psychological entitlement that entitlement has a "largely unconstructive impact on social behavior (p. 29). It has been found to be negatively related to factors such as agreeableness and stability (Jordan, Ramsay, & Westerlaken, 2017). When an outcome that is desired is not obtained by the individual, negative behaviors are likely when entitlement perceptions are high (Kopp, et al., 2011). Additionally, entitlement has been found to be associated with positive behaviors such as making the choice to work for a "socially responsible organization" even though the choice would result in less pay (Thomason, Etling, Brownlee, & Charles, 2015).

The examination of entitlement expanded quite naturally to focus on the context of the academic arena. It is not uncommon to hear about the current generation of students being "entitled" and feeling that they deserve good grades or a degree – regardless of performance. Sohr-Preson and Boswell (2015) found that both academic dishonesty and external locus of control were significantly related to perceptions of academic entitlement. This ties to work conducted by Sessoms, et al. (2016) noting that students that are academically entitled exhibit certain "undesirable characteristics" (p. 1). These qualities include individual perceptions related to the amount of control the student has over the academic environment, an external locus of control, and the view, as noted earlier, that the student is a customer of the academic institution. As defined by Ajzen (2002), an external locus of control represents the perception that outcomes are determined by nonbehavioral factors" (p. 676). This could essentially mean, that in the context of the academic environment, the outcomes (grades, etc.) are not perceived a result of specific behavior conducted by the student.

Expanding the examination of generalized or psychological entitlement to the academic environment has created much interest and has resulted in a context-specific construct aimed at understanding perceptions and beliefs of students in higher education. Several studies have looked at academic entitlement and have indicated its potential in explaining outcomes (e.g. Jordan, et al., 2017; Sessoms, et al., 2016). Using a measure specific academic entitlement, described in the following section, this study aims to provide additional detail related to how information system student performance and entitlement perceptions are related.

3. METHODOLOGY

Academic entitlement was assessed using the eight-item single-factor scale developed by Kopp et al. (2011). The items, shown in the Appendix in Table 1, were measured on a 7-point Likert-type scale with 1 representing "Strongly Disagree" and 7 representing "Strongly Agree".

The survey collected additional information including demographic data on gender, age, employment, major area of study, and year (academic classification) in school. Respondents also self-reported their overall GPA as well as their GPA in courses within their major area of study. GPA was collected in nine ordinal categories rather than as a raw value (Appendix Table 2).

Surveys were distributed to students at a large public university in the southeastern United States. The primary point of data collection was during an undergraduate course in business analytics that is required in programs for all majors in the college of business.

The voluntary survey was completed by 529 students which represent 24.7% of the population of students that would potentially be eligible to take that level of course. Of the submitted surveys, ten were removed from the sample due to lack of answers to items that were critical to the analysis, resulting in a final sample size of 519 students.

Table 2 (see Appendix) shows descriptive statistics on the demographic information collected in the survey as well as the proportion of certain characteristics in the population of students in the college of business. While the gender and major area appear to be fairly represented relative to the population, the academic classification and overall GPA differ substantially. As the course is a junior-level course, it would be expected that fewer sophomores would be eligible and that might skew the results towards upperclassmen and more specifically juniors. Concerning the self-reported overall GPA, the students appear to have systematically overestimated their academic performance despite the reporting of GPA in their semester grade report. It can be assumed that the same overestimation would occur with the self-reported GPA within their major area of study. It was noted that the overestimation of GPA was persistent even when the underrepresented sophomores were excluded from the population percentages.

4. ANALYSIS

In order to determine the degree of fit of the academic entitlement construct, an initial confirmatory factor analysis (CFA) was performed. The fit of the model was to be determined by the following combination of measures: 1) the χ^2 statistic; 2) the root mean square error of approximation (RMSEA; Steiger & Lind, 1980); 3) the comparative fit index (CFI; Bentler, 1990); and 4) the non-normed fit index (NNFI; Tucker & Lewis, 1973). Based on the advice of Hu and Bentler (1999), a value of .06 or below is considered an acceptable fit for the RMSEA, with comparative values of .90 or more (.95 or greater preferred) for the CFI and NNFI. All analyses were performed utilizing the lavaan package (Rosseel, 2012) and R (R Core Team, 2013).

The procedure used for this analysis began with a determination of overall fit of the CFA model. If a positive fit is achieved, the next step is to ascertain if group differences exist in the fit based on a student majoring in information systems relative to other majors. These differences can manifest themselves in multiple places in a CFA model, so a series of measurement models (Milfont and Fischer, 2010) are fit with increasing restrictions on the different components of the model that are allowed to vary among the groups. In general, six models are fit in sequence. Model 1 is the baseline model and incorporates the groups into the model with no restriction other than equivalent factorial structure. Configural invariance would be indicated if Model 1 shows good fit. Model 2, which includes the factor structure constraint from Model 1, adds the restriction of equivalent factor loadings among the groups. Metric invariance is achieved with a good Model 2 fit, and this would allow for the investigation of group differences in academic entitlement. Model 3 builds on Model 2 by adding a requirement for equal intercepts and is an indication of scalar invariance. Model 4 is a measure of strict model invariance by adding the restriction of equivalent error variances among the groups. Note group scores can be compared without the proper fit of Model 4. Models 5 and 6 are incremental to Model 4 and measure marginal change from that base. Model 5 tests the equivalence of factor variance/covariance structures among the groups. Model 6 evaluates the factor means to determine if they can be considered equal among the groups.

As the results of these models are incremental, the extent to which the academic entitlement factor differs among the groups can be determined by looking at the marginal changes in certain fit statistics. In other words, when the additional restriction in a subsequent model produces a reduced fit, then the preceding model provides an indication of the extent to which the groups do not vary. To evaluate these models, specific fit statistics designed for nested models are employed. In addition to those mentioned earlier, the Akaike Information Criterion (AIC; Akaike, 1974) and McDonald's non-centrality index (NCI; McDonald, 1989) fit statistics will be utilized. In general, higher values of AIC indicate a reduced fit. Cheung and Rensvold (2002) recommend that marginal changes .01 and .02 or more (on the negative scale) in the CFI and NCI measures respectively are indicative of reduced fit in the more restricted model.

Following the determination of any factor structure differences among the groups based on major area, an investigation was made to determine if demographic measures included in the study are associated with the academic entitlement level of the respondents. As gender and employment status are represented in groups, the procedure outlined above was utilized to determine if there are differences in academic entitlement structure among those factor levels. For quantitative variables age, overall GPA, and within-major GPA, composite academic entitlement scores were calculated for each respondent and regressed on those measures.

5. RESULTS

The internal consistency of the academic entitlement scale as measured by Cronbach's Alpha was .79. A maximum-likelihood confirmatory factor analysis was run on the sample for the first-order latent variable of academic entitlement. Overall model fit was acceptable, with $\chi^2 = 536.61$ (20 *df*, $p = .000$), RMSEA = .057 (90% CI = .039 -.076), CFI = .962, and NNFI = .946. All *p*-values of estimated parameters were at .000. The ratio of observations per estimated parameter was greater than 32 to 1, significantly more than the minimum of 5 to 1 suggested by Bentler and Chou (1987).

The academic entitlement CFA model was evaluated to determine if it was invariant to whether or not the student was majoring in information systems. Model fit statistics for the incremental Models 1 through 6 are shown in the Appendix in Table 3. Based on the results from Model 1, it can be concluded that the overall fit of the academic entitlement CFA model to students from the college was acceptable when their major in information systems (or not) is brought in as a mitigating factor. Results from subsequent Models 2 through 6 show that incremental restrictions were not significantly detrimental to the model's fit. All models show acceptable fit levels and marginal changes to AIC, CFI, and NCI are within acceptable values at all increments. Given these results, it can be concluded that the choice of the information systems major is not related to the level of academic entitlement in this population.

As the major areas have differing proportions of gender (e.g. males make up 75.7% of information systems majors yet 60% of all majors in this college), the academic entitlement CFA model was investigated to determine if it was invariant to gender. It was important to rule out that a difference in academic entitlement by major area was offset by a gender effect. As such, Models 1 through 6 were fit to the entitlement CFA model using gender as a mitigating factor. Model 1 showed acceptable fit (Appendix Table 4) with subsequent Models 2 through 6 showing no significant degradation in fit despite the additional constraints on invariance. It can be concluded that there is no significant difference in the academic entitlement model among genders and thus the invariance of the model to the information systems major was not gender related.

To investigate whether employment status was related to academic entitlement, an initial model was created that separated the three employment levels into groups to determine if there was a difference. The initial model showed some reduction in fit, particularly in the RMSEA fit statistic, which was beyond acceptable range at .069 (Appendix Table 5). Other fit statistics remained marginally acceptable, but subsequent Models 2 through 6 did not show marked change from the initial model as succeeding parts of the CFA model were made invariant. From these results, it was concluded that the employment status of a student was unrelated to their level of academic entitlement.

To determine if academic entitlement was related to the other demographic factors, composite

ISSN: 2473-3857
v5 n4939

scores for academic entitlement were calculated using the coefficient matrix from the base confirmatory factor analysis on academic entitlement (Appendix Table 1). The composite scores were regressed on the age of the student and the self-reported GPAs. As the overall and within-major GPAs were recorded using an ordinal scale, the midpoint of each GPA category was utilized to create an approximate estimate. The fit of this model indicated a significant inverse relationship between the mean academic entitlement score and age ($p \approx .0101$) and within-major GPA ($p < .001$). Interestingly, the relationship with overall GPA was not found to be significant ($p \approx .0995$) nor inverse. However, subsequent investigation of the within-major GPA showed that overall GPA became significant ($p \approx .0415$) with an inverse relationship when within-major GPA was removed from the model; they simply shared information as would be expected. R-squared for the initial regression model was .0569.

As a final comparison of students majoring in information systems with those that are not, a model that included academic entitlement with age, within-major GPA, and gender was created. The initial fit of this model was acceptable (Appendix Table 6). The coefficient estimates for the covariates in this initial model did show some apparent difference as the information systems students had a significant inverse relationship between academic entitlement and age ($p \approx .005$), and academic entitlement and within-major GPA ($p \approx .019$). Students in other majors had a significant inverse relationship with academic entitlement and within-major GPA ($p < .001$), but the relationship with age was insignificant ($p \approx .152$). In both major areas, the relationship of gender to academic entitlement was not significant ($p > .500$). To test the equivalence of the significant relationships, a seventh model was added to Models 1 through 6 to specifically test the invariance of regression slopes among the two groups. Results from the series of models seemed to show no apparent difference in the groups even among the regression slopes. In conclusion, there was insufficient evidence to show that students majoring in information systems are different from other majors in academic entitlement and its relationship to age, within-major GPA, and gender.

6. DISCUSSION

The importance and potential power of academic entitlement has been noted. Studies have examined both generalized and psychological entitlement for many years. The inclusion of a specific measure to be used in academic environments highlights its importance as well as the need to take a context specific approach.

As the overall goal was to examine entitlement for information systems students, the study allowed for the inclusion of additional majors that made the exploration more successful. Being able to compare across groups has driven numerous studies in the IS discipline. While the findings indicated that the groups were similar, this does help universities and those in education form a general perspective. Just because the groups are similar does not take away from the potential of academic entitlement to impact outcomes.

It was interesting to find that age was not found to be significantly related to academic entitlement. This would indicate that at least among current students, generational differences are not apparent, which seems counter to what is perceived. Entitlement is more connected to performance, or, more specifically, the lack of performance academically. Perhaps poorer students see the scores of higher performance students, desire them, and consequentially feel entitled to them too. Previous research has shown that individuals that underperform often have higher levels of academic entitlement (Anderson, et al., 2013). Higher academic performance students may feel they earned their scores through effort.

Previous research had found gender differences in academic entitlement (Ciani, Summers, & Easter, 2008; Sohr-Preston & Boswell, 2015), but this study did not replicate those findings. Gender did not play a role in either the information systems major or the group of students in other majors in the business college. In comparing the two studies, it is important to note that different measurement instruments were used (Achacoso, 2002; Chowning & Campbell, 2009), and it was not possible to compare other demographic factors across the groups.

Our findings highlighted the role of within-major GPA as being related to the measure of academic entitlement used in this study. While this may seem like a minor finding, it could point to the potential impact for academic entitlement beliefs to be stronger towards the major when compared to situations that are not major specific.

ISSN: 2473-3857
v5 n4939

7. LIMITATIONS AND FUTURE RESEARCH

As with any study, there is a need to address limitations and options for improving future research in the area. The cross-sectional nature of the data used warrants attention. The data for this study was collected at a single point in a course geared to the junior-level of a student's academic program. It would be necessary, to fully understand the importance of academic entitlement, to collect data at multiple points in time. This would allow for additional exploration related to the relationship between entitlement and performance. Academic entitlement, as previously noted, is a contextual construct rooted in concepts provided by personality studies (narcissism) and other factors related to the self-concept. While often stable, trait-like constructs can and do change over time. Since academic entitlement is specific to the academic environment, it is possible that perceptions change as an individual progress through the chosen course(s) of study. In a study conducted by Sessoms, et al. (2016), findings indicated there could be increases over time, but the authors noted additional research should be conducted.

It would be beneficial to collect data from multiple higher education institutions. This study focused on data collected from one institution. Collecting data from students at other public as well as private universities would strengthen understanding of the construct and the role it plays in student behaviors and outcomes.

The GPA used in this study, as a measure of student performance, was reported by the respondent. This could be a potential issue and may be addressed by collecting the data directly from the institutions. It is also necessary to expand the examination of academic entitlement to include other outcomes as well as factors that influence these perceptions. Understanding the relationship to satisfaction or other outcomes for information systems majors with the academic experience would be interesting. As noted earlier, students often view the university as a consumer would when purchasing a product at a retail store. Academic entitlement would seemingly play a role in the evaluation of the program attended just as it has been noted to play a role in the general evaluation.

8. CONCLUSION

The goals of this study were to gain a better understanding of academic entitlement in undergraduate information systems students, to determine whether academic entitlement differed across key demographic variables, and to examine whether there was a relationship with outcomes (GPA). The sample allowed for additional analysis of undergraduate students in other business disciplines as well as a comparison of IS students to other majors. After completing analyses on several models, results indicated that academic entitlement was related to within-major GPA for the students examined. While there were no additional significant differences between majors in this study or across the demographic factors included, the importance of understanding academic entitlement in higher education remains. The focus on the IS student allowed for a comparison, which is often seen as necessary. Historically, individuals in the IS profession have been viewed as unique; therefore, we tend to carry that concept forward making sure to always validate similarities or highlight inconsistencies. In this case, the primary path to follow is to include academic entitlement beliefs in situations where you are trying to assess performance (real and perceived) and in situations where any outcomes play a role. If concepts introduced about the construct (changing over time, correlating with negative behaviors, etc.) prove to be consistent, there could be significant change warranted in higher education.

8. REFERENCES

Achacoso, M.V. (2002). What do you mean my grade is not an A? An investigation of academic entitlement, causal attributions, and self-regulation in college students. Unpublished Doctoral Dissertation. University of Texas, Austin.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the Theory of Planned Behavior. *Journal of Applied Social Psychology*, 32(4), 665-683.

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, 19(6), 716–723.

Anderson, D., Halberstadt, J., & Aitken, R. (2013). Entitlement attitudes predict students' poor performance in challenging academic conditions. *International Journal of Higher Education*, 2(2), 151-158.

Bentler, P.M. (1990). Comparative Fit Indexes in Structural Models. *Psychological Bulletin*, 107, 238-246.

ISSN: 2473-3857
v5 n4939

Bentler, P.M. & Chou, C.P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16, 78-117.

Campbell, W.K., Bonacci, A.M., Shelton, J., Exline, J.J., & Bushman, B.J. (2004). Psychological entitlement: interpersonal consequences and validation of a self-report measure. *Journal of Personality Assessment*, 83(1), 29-45.

Chowning, K. & Campbell, N.J. (2009). Development and validation of a measure of academic entitlement: individual differences in students' externalized responsibility and entitled expectations. *Journal of Educational Psychology*, 101(4), 982-997.

Cheung, G.W. & Rensvold, R.B. (2002). Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance, *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 233-255.

Ciani, K.D., Summers, J.J., & Easter, M.A. (2008). Gender differences in academic entitlement among college students. *The Journal of Genetic Psychology*, 169(4), 332-344.

Duckworth, A.L., Peterson, C., Matthews, M.D., Kelly, D.R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, 92(6), 1087-1101.

Finney, T.G. & Finney, R.Z. (2010). Are students their universities' customers? An exploratory study. *Education + Training*, 52(4), 276-291.

Hu, L. & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.

Jeffres, M.N., Barclay, S.M., Stolte, S. (2014). Academic entitlement and academic performance in graduating pharmacy students. *American Journal of Pharmaceutical Education*, 78(6), 1-9.

Jordan, P.J., Ramsay, S., & Westerlaken, K.M. (2017). A review of entitlement: implications for workplace research. *Organizational Psychology Review*, 7(2), 122-142.

Kopp, J.P., Zinn, T.E., Finney, S.J., & Jurich, D.P. (2011). The Development and Evaluation of the Academic Entitlement Questionnaire. *Measurement and Evaluation in Counseling and Development*, 44(2), 105-129.

McDonald, R.P. (1989). An index of goodness-of-fit based on non-centrality. *Journal of Classification*, 6, 97-103.

Milfont, T.L. & Fischer, R. (2010). Testing measurement invariance across groups: Applications in cross-cultural research. *International Journal of Psychological Research*, 3(1), 111-121.

R Core Team (2013). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL http://www.R-project.org/.

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1-36. URL http://www.jstatsoft.org/v48/i02/.

Sessoms, J., Finney, S.J., & Kopp, J.P. (2016). Does the measurement of academic entitlement change over time? *Measurement and Evaluation in Counseling and Development*, 49(3), 243-257.

Sohr-Preston, S. & Boswell, S.S. (2015). Predicting academic entitlement in undergraduates. *International Journal of Teaching and Learning in Higher Education*, 27(2), 183-193.

Steiger, J.H. & Lind, J.C. (1980, May). *Statistically-based tests for the number of common factors*. Paper presented at the Annual Spring Meeting of the Psychometric Society, Iowa City, IA.

Thomason, S., Etling, C., Brownlee, A., & Charles, T. (2015). Psychological entitlement and conscientiousness as predictors of socially responsible workplace decisions. *Small Business Institute Journal*, 11(2), 1-15.

Tomlinson, E.C. (2013). An integrative model of entitlement beliefs. *Employee Responsibilities and Rights Journal*, 25, 67-87.

Tucker, L.R. & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1-10.

 ISSN: 2473-3857
v5 n4939

9. Appendix

Table 1: Academic Entitlement Items

Item	Statement	Mean	Std. Dev.	CFA Coefficients
1	If I don't do well on a test, the professor should make tests easier or curve grades.	3.68	1.68	1.000
2	If I am struggling in a class, the professor should approach me and offer to help.	3.57	1.84	0.919
3	If I cannot learn the material for a class from lecture alone, then it is the professor's fault when I fail the test.	2.61	1.53	0.731
4	I am a product of my environment. Therefore, if I do poorly in class, it is not my fault.	2.25	1.40	0.756
5	Because I pay tuition, I deserve passing grades.	2.05	1.48	0.853
6	Professors should only lecture on material covered in the textbook and assigned readings.	3.21	1.78	0.867
7	It is the professor's responsibility to make it easy for me to succeed.	2.77	1.64	1.073
8	I should be given the opportunity to make up a test, regardless of the reason for the absence.	3.34	1.85	1.063

Table 2: Demographics

Variable	Sample	Sample Percent	Percent in College
Year			
Sophomore	14	2.7%	24.5%
Junior	301	58.4%	33.6%
Senior	200	38.8%	42.0%
Missing	14		
Gender			
Male	317	60.0%	58.8%
Female	211	40.0%	41.2%
Missing	1		
Major Area			
Accounting	83	15.7%	18.8%
Business Administration	114	21.6%	23.4%
Economics	7	1.3%	2.6%
Entrepreneurship	16	3.0%	3.1%
Finance	59	11.2%	11.7%
Information Systems	100	18.9%	16.1%
Marketing	54	10.2%	12.1%
Management	82	15.5%	9.6%
Other	14	2.6%	2.6%
GPA Overall			
Below 2.00	0	0.0%	3.2%
2.00-2.24	23	4.4%	5.9%
2.25-2.49	19	3.6%	11.2%

2.50-2.74	44	8.4%	14.5%
2.75-2.99	72	13.8%	15.6%
3.00-3.24	123	23.5%	16.1%
3.25-3.49	86	16.4%	14.4%
3.50-3.74	73	14.0%	10.7%
3.75-4.00	83	15.9%	8.5%
Missing	6		
GPA within Major			
Below 2.00	3	0.6%	
2.00-2.24	0	0.0%	
2.25-2.49	7	1.4%	
2.50-2.74	31	6.2%	
2.75-2.99	64	12.8%	
3.00-3.24	125	25.0%	
3.25-3.49	79	15.8%	
3.50-3.74	84	16.8%	
3.75-4.00	107	21.4%	
Missing	29		
Employment			
Full-time	128	25.7%	
Part-time	270	54.2%	
Not Employed	100	20.1%	
Missing	31		
Age			
19-21	103	47.9%	
22-24	72	33.5%	
25-27	21	9.8%	
28-30	8	3.7%	
31-33	5	2.3%	
34-36	4	1.9%	
37 or more	2	0.9%	
Missing	14		

Table 3: Goodness of Fit Statistics for Model Testing

Measurement Invariance across Major Area (INFS/Non-INFS)

Model	χ^2	*df*	p-value	RMSEA	AIC	CFI	NCI	NNFI
1	72.53	40	0.001	0.056	15087.4	0.963	0.969	0.948
2	80.09	47	0.002	0.052	15087.0	0.962	0.969	0.955
3	89.38	54	0.002	0.050	15076.3	0.960	0.966	0.958
4	103.51	62	0.001	0.051	15074.4	0.953	0.961	0.957
5	104.17	63	0.001	0.050	15073.1	0.953	0.961	0.958
6	103.76	63	0.001	0.050	15072.7	0.958	0.961	0.959

ISSN: 2473-3857
v5 n4939

Comparison of Nested Models

Models	Δχ^2	Δ*df*	p-value	Δ RMSEA	Δ AIC	Δ CFI	Δ NCI	Δ NNFI
1 to 2	7.56	7	0.373	-0.004	-0.4	-0.001	-0.001	0.007
2 to 3	9.29	7	0.232	-0.002	-10.7	-0.002	-0.002	0.003
3 to 4	14.13	8	0.078	0.001	-1.9	-0.007	-0.006	-0.001
4 to 5	0.66	1	0.417	-0.001	-1.3	0.000	0.000	0.001
4 to 6	0.24	1	0.623	-0.001	-1.8	0.005	0.001	0.002

Note: RMSEA = root mean square error of approximation; AIC = Akaike Information Criterion; CFI = comparative fit index; NCI = McDonald's non-centrality index; NNFI = non-normed fit index. Model 1 = equality of overall structure; Model 2 = Model 1 plus invariant loadings; Model 3 = Model 2 plus equivalent intercepts; Model 4 = Model 3 plus invariant residuals; Model 5 = Model 4 plus invariant factor covariance matrices; Model 6 = Model 4 plus invariant factor means.

Table 4: Goodness of Fit Statistics for Model Testing

Measurement Invariance across Gender

Model	χ^2	*df*	p-value	RMSEA	AIC	CFI	NCI	NNFI
1	73.66	40	0.001	0.057	15051.2	0.962	0.968	0.947
2	89.64	47	0.000	0.059	15053.1	0.952	0.960	0.943
3	107.07	54	0.000	0.062	15056.6	0.940	0.950	0.938
4	112.86	62	0.000	0.056	15046.4	0.943	0.952	0.948
5	113.68	63	0.050	0.056	15045.2	0.943	0.952	0.949
6	112.95	63	0.000	0.055	15044.4	0.944	0.953	0.950

Comparison of Nested Models

Models	Δχ^2	Δ*df*	p-value	Δ RMSEA	Δ AIC	Δ CFI	Δ NCI	Δ NNFI
1 to 2	15.98	7	0.025	0.002	2.0	-0.010	-0.008	-0.004
2 to 3	17.43	7	0.015	0.003	3.4	-0.012	-0.010	-0.005
3 to 4	5.80	8	0.670	-0.006	-10.2	0.003	0.002	0.010
4 to 5	0.81	1	0.368	0.000	-1.2	0.000	0.000	0.001
4 to 6	0.09	1	0.763	-0.001	-1.9	0.001	0.001	0.002

Note: RMSEA = root mean square error of approximation; AIC = Akaike Information Criterion; CFI = comparative fit index; NCI = McDonald's non-centrality index; NNFI = non-normed fit index. Model 1 = equality of overall structure; Model 2 = Model 1 plus invariant loadings; Model 3 = Model 2 plus equivalent intercepts; Model 4 = Model 3 plus invariant residuals; Model 5 = Model 4 plus invariant factor covariance matrices; Model 6 = Model 4 plus invariant factor means.

Table 5: Goodness of Fit Statistics for Models Testing

 ISSN: 2473-3857
v5 n4939

Measurement Invariance across Gender

Model	χ^2	*df*	p-value	RMSEA	AIC	CFI	NCI	NNFI
1	73.66	40	0.001	0.057	15051.2	0.962	0.968	0.947
2	89.64	47	0.000	0.059	15053.1	0.952	0.960	0.943
3	107.07	54	0.000	0.062	15056.6	0.940	0.950	0.938
4	112.86	62	0.000	0.056	15046.4	0.943	0.952	0.948
5	113.68	63	0.050	0.056	15045.2	0.943	0.952	0.949
6	112.95	63	0.000	0.055	15044.4	0.944	0.953	0.950

Comparison of Nested Models

Models	$\Delta\chi^2$	Δ*df*	p-value	Δ RMSEA	Δ AIC	Δ CFI	Δ NCI	Δ NNFI
1 to 2	15.98	7	0.025	0.002	2.0	-0.010	-0.008	-0.004
2 to 3	17.43	7	0.015	0.003	3.4	-0.012	-0.010	-0.005
3 to 4	5.80	8	0.670	-0.006	-10.2	0.003	0.002	0.010
4 to 5	0.81	1	0.368	0.000	-1.2	0.000	0.000	0.001
4 to 6	0.09	1	0.763	-0.001	-1.9	0.001	0.001	0.002

Note: RMSEA = root mean square error of approximation; AIC = Akaike Information Criterion; CFI = comparative fit index; NCI = McDonald's non-centrality index; NNFI = non-normed fit index. Model 1 = equality of overall structure; Model 2 = Model 1 plus invariant loadings; Model 3 = Model 2 plus equivalent intercepts; Model 4 = Model 3 plus invariant residuals; Model 5 = Model 4 plus invariant factor covariance matrices; Model 6 = Model 4 plus invariant factor means.

Table 6: Goodness of Fit Statistics for Models Testing

Measurement Invariance across Major Area (INFS/Non-INFS) including Major GPA, Age, and Gender

Model	χ^2	*df*	p-value	RMSEA	AIC	CFI	NCI	NNFI
1	147.13	82	0.000	0.057	14433.6	0.927	0.936	0.907
2	154.57	89	0.000	0.055	14427.1	0.926	0.936	0.914
3	164.38	96	0.000	0.054	14422.9	0.923	0.933	0.917
4	176.34	104	0.000	0.053	14418.8	0.919	0.929	0.919
5	176.36	105	0.000	0.052	14416.9	0.920	0.930	0.921
6	177.71	105	0.000	0.053	14418.2	0.918	0.929	0.919
7	179.49	107	0.000	0.052	14416.0	0.919	0.929	0.921

Comparison of Nested Models

Models	$\Delta\chi^2$	Δ*df*	p-value	Δ RMSEA	Δ AIC	Δ CFI	Δ NCI	Δ NNFI

ISSN: 2473-3857
v5 n4939

1 to 2	7.44	7	0.384	-0.002	-6.5	-0.001	0.000	0.007
2 to 3	9.81	7	0.200	-0.001	-4.2	-0.003	-0.003	0.003
3 to 4	11.96	8	0.153	-0.001	-4.1	-0.004	-0.004	0.002
4 to 5	0.02	1	0.893	-0.001	-1.9	0.001	0.001	0.002
4 to 6	1.37	1	0.242	0.000	-0.6	-0.001	0.000	0.000
4 to 7	3.15	3	0.369	-0.001	-2.8	0.000	0.000	0.002

Note: RMSEA = root mean square error of approximation; AIC = Akaike Information Criterion; CFI = comparative fit index; NCI = McDonald's non-centrality index; NNFI = non-normed fit index. Model 1 = equality of overall structure; Model 2 = Model 1 plus invariant loadings; Model 3 = Model 2 plus equivalent intercepts; Model 4 = Model 3 plus invariant residuals; Model 5 = Model 4 plus invariant factor covariance matrices; Model 6 = Model 4 plus invariant factor means; Model 7 = Model 4 plus invariant regression slopes.