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Mohammad Alauddin, Adrian Ashman, Son Nghiem, Knox Lovell

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What Determines Students' Expectations and Preferences in University Teaching and Learning? An Instrumental Variable Approach

Mohammad Alauddin^{a*}, Adrian Ashman^b, Son Nghiem^c and Knox Lovell^a

^aSchool of Economics
The University of Queensland
Brisbane, Australia 4072

^bSchool of Education
The University of Queensland
Brisbane, Australia 4072

^cSchool of Public Health and Social Work
Queensland University of Technology
Kelvin Grove Campus
Brisbane, Australia 4059

*corresponding author (m.alauddin@uq.edu.au)

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1. INTRODUCTION

The Western world has experienced phenomenal changes in the context of teaching and learning in higher education over the last quarter century in two key ways. First, student numbers have increased greatly due to the expansion in the international student market and increased domestic participation and second, the nature of the student population has changed significantly with varied learning needs, academic abilities, and aspirations that typify increasing diversity in the university student population (Biggs & Tang, 2011; Denson & Zhang, 2010; Vardi, 2011). Flexibility of enrolment and entry (part-time vs full-time, school leavers vs matured age student) has also added a new dimension to this diversity (Martin et al., 2013). Managing the profound change from elite to mass education at the university level has posed significant challenges to teachers and educational institutions because of the diverse needs, aspirations, expectations, and preferences of students in the teaching and learning process.

The present study has three goals. First, it develops a 59-item Students' Expectations and Preference Questionnaire (SEPQ). Second, it uses factor analysis to examine student responses based on this SEPQ and explore relevant dimensions within the data. Third, an econometric model using university entry score as an instrumental variable (IV) identifies determinants of these dimensions. This research follows a deductive approach and develops research questions from the existing literature. As will be noted later in this paper, the questionnaire incorporated items that reflected both implicit and explicit expectations of students (Koskina, 2013).

Section 2 provides a brief review of the relevant literature. Section 3 focuses on the survey instrument, participants and procedure as well as the analytical frameworks employed. Section 4 presents and discusses the results from factor analysis and the econometric model while Section 5 presents the conclusions and explores the implications.

2. A BRIEF REVIEW OF LITERATURE

A large body of literature contends that students in institutions of higher education increasingly perceive themselves as customers (see e.g., Gruber et al., 2010). Two decades ago, Plater (1995, p. 24) summed up the American scenario:

We can then begin to think of education as a product. Whether we feel comfortable with such terminology or not, we need to recognize that virtually every other sector of the American society has gone (or is going) through a transformation that makes funding contingent upon the delivery of valued outcomes ... What we do with our time, then, will be recorded by recognition that we are becoming a constituent-based service industry or profession.

Subsequent studies (e.g., Delucchi & Korgen, 2002) confirmed evidence of consumerism among American university students. However, the spread of consumerism among university students is not just confined to the American context. It has spread to other developed countries including Britain (Kandiko & Mawer, 2013; Koskina, 2013) and Australia (Lodewijks, 2011).

Higher education institutions in the developed world increasingly regard higher education as a business-like commodity (a commercial good) and focus more on meeting students' needs by regarding them as customers, especially in universities that are tuition-based (DeShields et al., 2005). Fee-paying students were likely to expect "value for money" (Gruber et al., 2010; Koskina, 2013). Thomas and Galambos (2004) suggested that students' satisfaction was

critically important for recruiting new students as they view themselves as consumers of higher education service. Gruber et al. (2010) employing German data found that students' satisfaction with school placements and atmosphere among the students (personal environment) but dissatisfaction with university buildings and the lecture theatres (physical environment).

Koskina (2013) employed a psychological contract framework to analyse student expectations in one English business school and identified the implicit and explicit nature of students' expectations (pp. 1029-1030). The former referred to such matters as lecturers engaging students professionally and creatively, being experts in their fields, having good classroom presentation and delivery skills, being able to communicate, and accommodating cultural diversity within the student population. The explicit expectations included detailed and constructive feedback, pastoral support, coursework guidance, and advice. The explicit expectations emphasised the economic exchange aspect of the contract. A student's view typifies the nature of this exchange. As Koskina (2013, p. 1013) reported "the university is expecting from us to pay our fees we expect from it to provide all the services being promised to us ... I want to get a good service in return for the fees I am paying!". The implicit and explicit expectations identified by Koskina suggested that students perceive themselves as both learners and customers at the same time.

Another stream of literature challenges the view that students are customers. Mason et al. (1995, p.403) stated:

Students are not fully informed consumers because they do not necessarily know whether the professor is providing them with the relevant material, and doing so correctly. Consequently, students' judgments may be insufficiently well informed to evaluate this portion of the performance of their professors. Furthermore, students may not be fully cognisant of the quality until later life experiences

dictate the long-term value transferred.

Alauddin and Tisdell (2000) (see also Alauddin & Kifle, 2014; Mason et al., 2003) echoing this view, suggested that the asymmetry of information between the two parties (the student and the teacher) could lead to market failure. Furthermore, in contrast to the traditional customer–supply model, the customer in higher education (the student) directly contributes to the quality of the education s/he acquires. This implies that the quality of knowledge imparted depends not only on the service provider (the teacher) but also on the intellectual ability of, and the effort expended by the learner. While analysing students’ study philosophy, beliefs and attitude to learning in higher education, Alauddin and Ashman (2014) found that contrary to the conventional wisdom portraying students as customers there was a core group of students that considered teaching and learning to be synonymous with acquisition of knowledge rather than grade maximisation.

Armstrong (2003), Bailey (2000) and White (2007) questioned the idea of students as customers and supported the view that they are clients. White (2007) argued that customers demand a service be to their satisfaction and that engagement was not part of the equation, while in contrast, clients engage with the process. More recently, Cuthbert (2010) identified problems inherent in thinking of students as customers and suggested a multidimensional approach to understand the relative roles of students and markets in managing higher education. In a similar vein, Mark (2013, p. 8) argued that ensuring student satisfaction required embedding quality into the “learning process through quality instruction, quality assessment and greater attention to students’ needs”.

The present study subscribes to the view that students are not primarily customers but learners even though some might consider themselves as customers. The paper focusses on the following research question:

Do students' expectations and preferences in university teaching and learning differ according to a range of variables that characterise diversity in the student population?

The two subsidiary questions that underpin the research question are:

1. Can the students' responses be reduced to a small number of representative dimensions that reflect students' expectations and preferences of university teaching and learning?
2. Do these dimensions vary according to students' age, sex, linguistic background, academic performance, study-level and study discipline, within their degree programme, and university entry (school-leaving) score?

The rationale for employing independent variables such as age, sex, linguistic background, and academic performance rested on their influence on the students' expectations according to the relevant literature. Several factors, including culture (Johnson & Kumar, 2010), sex (Moore et al., 2008), academic performance (Moore et al., 2008), age (Levine, 1993) and study level (Shank, et al., 1995), shaped students' expectations and preferences. The present study included students' study discipline and university entry score as possible additional predictors.

3. MATERIALS AND METHODS

3.1 Survey Instrument, Participants and Procedure

Instrument

Consistent with its goals and objectives, of the study, the researchers developed the Students' Expectations and Preferences Questionnaire (SEPQ) as no comparable instrument could be located in previous studies of students' expectations and preferences. The development of the questionnaire entailed several stages.

Firstly, the researchers adapted eight good teaching scale questions as part of expectations about the lecturing staff from the *Student Experience Survey* (UQ, 2004). For example, the item “I consider it important that the majority of the lecturing staff in my major area of study or discipline were experts in their field” was adapted to “I expect the lecturing staff to be experts in their field”.

Secondly, the researchers developed the remaining 51 items through extensive discussions with four experienced academics at various times over 3-4 months. Over the same period, the researchers also held 10 individual-level and small group (2-4 students) discussions with students of different age groups, sex, ethno-linguistic backgrounds, academic abilities, study levels, and study disciplines in the same university. Thus, the final version of the scale benefitted from expert and stakeholder consultations that provided the foundation for content validity. Overall, the survey instrument contained items that related both to the academic orientation (e.g., intellectual challenge) of the process as well as the customer service delivery aspect (e.g., prompt feedback, and making course materials available in time amongst other things). The instrument used a 5-point Likert scale ranging from ‘1’ (strong disagreement) to ‘5’ (strong agreement) for all 59 items. Table 1 presents some salient features of the instrument.

Table 1: Focal area of expectations and preferences of the survey instrument

Focal area of expectations and preferences	Number of items	Illustrative examples
Learning sessions (lecture, tutorial/laboratory sessions)	20	<ul style="list-style-type: none"> I want the lecture sessions to clearly set out the learning objectives in each topic I want the lecture sessions to clearly set out the links among learning objectives of the course I like emphasis on active participation in problem solving and class discussion.
Consultation, feedback and communication	12	<ul style="list-style-type: none"> I want flexibility in consultation so that I can meet the teaching staff outside the set hours Feedback sessions should identify my strengths and weaknesses and provide suggestions for improvement Regular emails/notices informing of important course related matters are an effective way of communication
Reading materials, presentation, and delivery	8	<ul style="list-style-type: none"> I want the lecture handouts to be useful learning aids I want visual presentations using PowerPoint to be very effective learning aids I want the recommended text, if any, and other materials to give me a good understanding of the course.
Lecturing staff	8	<ul style="list-style-type: none"> I expect the lecturing staff to teach in a way that stimulates my interest in the discipline I expect the lecturing staff to challenge and extend me intellectually

Course content	7	<ul style="list-style-type: none"> • The topics covered must be highly relevant to real world issues • The contents must be intellectually challenging
Assessment	4	<ul style="list-style-type: none"> • Course assessment requirements should be paced throughout the semester rather than being concentrated toward the end of the semester

The instrument sought information on student grouping variables e.g., age, sex, ethno-linguistic background, study-level, academic performance, study discipline, and university entry-level score.

Following approval by the relevant ethics committee, the researchers approached 20 lecturers as gatekeepers in various disciplines, teaching at different study levels at a highly research-intensive Australian university¹. Fourteen instructors granted gatekeeper permission to use their lectures for the survey: in Economics ($n = 9$), Business ($n = 2$), and Education ($n = 3$). The researchers also subsequently approached students from sciences, arts, and social sciences disciplines directly by email to increase the sample size and improve the diversity within the sample. The researchers administered the survey toward the middle of the semester. In class, students received, completed, and returned copies of the questionnaire to the researchers/research assistants. Where required due clarification was provided. Students took on average 20 minutes to complete the survey. Excluding missing observations, this study used 506 valid responses, including 50 valid responses to the emails the researchers sent. A careful analysis revealed close similarity between the demographic statistics of the two cohorts. This warranted a merger of the data from the two cohorts.

The study used one standard deviation distance on either side of their respective means to derive cut-off points for both age and academic performance. Table 2 provides frequency distribution of the probable independent variables. Participants from the students aged ≤ 20 years, those aged 20-25 and over 25 years respectively constituted 74.7%, 22.1% and 3.2% constituted of the sample. Male and female participants were almost evenly matched in their numbers. English-speaking background (ESB) students comprised 82% of the sample while non-English speaking background (NESB) students accounted for the remainder. Students studying Economics (economics single or double major) constituted 39.3% of the sample

¹ There are eight such universities (known as Group of Eight, Go8) in Australia.

while non-Economics (single or double major in other disciplines) majors accounted for the remaining participants. Lower undergraduate students accounted for 70% of the sample while 22.3% and 7.7% were from upper undergraduate and postgraduate groups respectively. Participants with $GPA \leq 5$ formed 36.8% of the sample while those in the $5.0 - \leq 6.2$ and > 6.2 categories constituted 44% and 19.2% of the sample respectively. The sample consists of a high proportion of high performing students. This is broadly consistent with the population at the university where the survey data were collected. With the assessment procedure being criterion-referenced rather than norm-referenced, such a distribution is not unusual. In addition, the data come from one of the Go8 universities that admit high quality students.

Table 2: Frequency distribution of the probable independent variables

Variable	Description	% (Frequency)
Age (Student's age, $N = 506$)		
Group 1	Student aged ≤ 20 years	74.7 (378)
Group 2	Student aged $>20 - \leq 25$ years	22.1 (112)
Group 3	Student aged >25 years	3.2 (16)
Sex (Student's sex, $N = 506$)		
Male	Male student	50.6 (256)
Female	Female student	49.4 (250)
Mother tongue (Student's mother tongue, $N = 506$)		
English-speaking (ESB)	English	80.0 (415)
Non-English speaking (NESB)	Non-English	18.0 (91)
Study Discipline (Student's study discipline, $N = 506$)		
Economics	Single or double Economics majors	39.3 (307)
Non-Economics	Single and double Non-economics majors	60.7 (199)
Study Level (Student's level in the degree program, $N = 506$)		
Lower undergraduates	First and second year students	70.0 (354)
Upper undergraduates	Third year students	22.3 (113)
Postgraduates	Postgraduate students	7.7 (39)
Academic Performance (Student's grade point average, GPA 1-7 scale, $N = 506$)		
Low	$GPA \leq 5.0$	36.8(186)
Medium	$GPA > 5.0 - \leq 6.2$	44.0 (223)

High

GPA > 6.2

19.2 (97)

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3.2 Analytical Frameworks

The study has employed two analytical techniques – factor analysis to identify dimensions within the expectations and preferences domain, and an econometric model employing instrumental variable approach to identify possible determinants of these dimensions.

Factor Analysis

Factor analysis was employed to derive an orderly simplification of the 59 latent variables (items) underlying students' expectations and preferences domain to a small number of representative constructs likely to reflect their response patterns (Field, 2013).

Criteria permitting, factor analysis requires that variables have roughly a normal distribution and the data are at least ordinal (Brace et al., 2016). The data did not satisfy formal procedure for normality such as the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests. However, these tests have limitations when applied to large samples so a statistically significant test does not necessarily indicate whether the deviation from normality biases any further statistical procedures (Field, 2013; Tabachnick & Fidell, 2014). Because of this, and other diagnostics presented in Section 4.1, factor analysis yields distinct and reliable factors.

The econometric model presented and discussed later in this section uses the scores for each factor resulting from factor analysis as a dependent variable. Factor scores for each factor have been calculated by using factor score coefficients (b_s) as weights shown in Equation (1).

$$\text{Factor}_i = b_1 \text{Variable}_1 + b_2 \text{Variable}_2 + \dots + b_n \text{Variable}_n + \varepsilon_i \quad (1)$$

The factor score coefficients were calculated using the regression method despite controversy about the best way to estimate a factor score (see, for example, Tabachnick & Fidell, 2014). However, as Acock (2008) states that there is rarely any significant difference in results. Acock further noted that a factor score has an advantage over a mean or total score as the

factor scores weight items according to their importance. The factor score coefficient matrix (B) is derived, as the product of the matrix of factor loadings and the inverse (R^{-1}) of the original correlation matrix. The resulting factor score matrix B represents “a purer measure of the relationship *unique* relationship between variables and factors” (Field, 2013, p. 673). Thus, factor scores represent the composite score for each observation (in the present case, student) on a particular factor (dimension).

Econometric Analysis

The dimensions of the students' expectations and preferences domain can be determined by a range of variables such as students, age, sex, linguistic background, study discipline, academic performance (GPA), and study level.

The relationship between expectations and preferences y_i (e.g., Lecturer, Teaching Approach and Contents and so on) and the independent variables can be specified by Equation (2).

$$y_i = \alpha_1 + \beta_1 GPA_i + \gamma_1 X_i + \varepsilon_i \quad (2)$$

where X_i is the vector of exogenous individual characteristics such as age, gender and linguistic background and so on; α_1 , β_1 and γ_1 are unknown parameters to be estimated; and ε is a random error.

One problem in estimating Equation (2) is that GPA is affected by unobserved individual factors such as academic ability, attitude toward academic achievement and effort level. The error term captures these unobserved factors. Thus, GPA is correlated with the error term, and hence Equation (2) is endogenous. In particular, GPA in Equation (2) can be expressed as a function of exogenous covariates Z_i that may include X_i :

$$GPA_i = \alpha_2 + \gamma_2 Z_i + \eta_i \quad (3)$$

Given that this study uses only cross-sectional data, one way to address the endogeneity issue in Equation (3) is the application of instrumental variable (IV) approach (Greene, 2012; Mallik & Shankar, 2016).

A valid IV should satisfy the condition that it is correlated with the endogenous variable but uncorrelated with the error term. In this data set, it is argued that the overall performance (OP) scores of students at the Year 12 level (school leaving stage) is likely to satisfy this condition. The present study converted to OP equivalent. In particular, Australian Tertiary Admission Rank (ATAR) scores were converted from ≥ 99 to OP1. For overseas students, a score within 10% of maximum possible scores was considered as OP1 equivalent. Acknowledging the difficulty of international conversion we conducted a test for the sensitivity of results by excluding all international students. This matter is discussed further in Section 4.2.

Based on the theory of human capital formation (Cervellati & Sunde, 2005), OP scores at high school level should correlate with GPA scores at the university level. OP scores correlate with the error term in the previous period (i.e., high school) but it is not correlated with the error term in the current period (i.e., university), assuming that there is no serial correlation. Given that this study only has access to a cross-sectional data set, this assumption is not testable.

4. RESULTS AND DISCUSSION

4.1 Results from Factor Analysis

The process of exploratory factor analysis (EFA)² started with the extraction of three, four and five factors with varimax rotation³. They all displayed similar explanatory powers.

²An alternative Confirmatory Factor Analysis (CFA) is a tool to evaluate *a priori* hypotheses (concerning factor structure) that are largely driven by theory (Mulaik, 1988). The aim of this paper is not to test a theory or hypotheses, and thus, exploratory factor analysis (EFA) appeared adequate.

However, based on explanatory power, internal consistency of the extracted factors and interpretability, and Kaiser-Meyer-Olkin measure of sampling adequacy (.901) and the significance of Bartlett's test of sphericity ($p < .0001$) justified the appropriateness of a four-factor solution. The process of factor analysis led to the exclusion of 11 items that did not meet the factor-loading threshold of $\geq .30$ (Field, 2013).

The four factors explained 41% of the total variance (Factor 1, 11.43%; Factor 2, 11.34%; Factor 3, 9.14%; and Factor 4, 9.04%) with respective Eigenvalues of 5.37, 5.33, 4.30 and 4.25. Cronbach's α -values were .871 for Factor 1, .970 for Factor 2, .796 for Factor 3, and .776 for Factor 4 demonstrating internal consistency of the items underlying each factor. Table 3 presents the results of the factor analysis.

Factor 1 (Feedback, Communication and Assessment): Sixteen items reflected students' preferences for communication with and feedback from the teaching staff. They included the speedy publication of assignment marks and the quality of feedback, the adequacy, accessibility and flexibility in consultation and communication. Students clearly indicated their preference for unambiguous statement on marking criteria, quality of various components of assessment, relative weights of progressive and end-of-semester examinations, and pacing of components of assessment.

Factor 2 (Lecturer, Teaching Approach and Contents): Thirteen items reflected expectations and preferences toward the lecturer's expertise in the discipline, and the intellectual challenge, respect and enthusiasm that s/he was able to demonstrate, the quality and relevance of the course content, and the components and instruments of assessment. The first five items with factor loadings $\geq .55$ related to the lecturer's ability to stimulate students' interest enhance their understanding of a study discipline by encouraging them to think in

³Oblique rotation produced factors that explained a much lower percentage of total variation than varimax rotation. Nor did it produce factor structures that could be meaningfully interpreted. So the authors stuck with varimax rotation.

innovative ways, communicating enthusiasm and demonstrating commitment to teaching. The next eight items reinforced expectations and preferences for intellectual challenge and stimulation, an optimal theory-application mix, well-integrated course learning sessions and assessment requirements, teaching materials at the forefront of research amongst other things.

Factor 3 (Active Participation and Engagement): Eleven items reflected students' preferences for active participation in the teaching and learning process. The top two items represented a preference for group learning sessions and the next four items related to an enabling environment for participation through open discussion, consultation and an emphasis on practicality of topics covered in a course. This factor therefore, represented an engagement and enfranchisement in the teaching and learning process.

Factor 4 (Presentation, Delivery and Focus): Ten items underpinned students' preferences for presentation, delivery and focus. Students expect and prefer that the lecturer provide lecture handouts and other reading materials as useful learning aids for a comprehensive understanding of any course. Students' other preferences include quality visual presentation, clarity and focus on the central message embodied in a topic, learning objectives, and applications of techniques and methods with appropriate illustrations.

Table 3: Four probable factors typifying university students' expectations and preferences domain

Factor 1: Feedback, Communication and Assessment	
Description	Loading
Feedback sessions should improve my learning skills and course outcomes	.652
The lecturer/tutor/demonstrator should set aside an adequate number of hours for consultation with students	.641
I want a clear emphasis on consultation with a list of problems	.600
Feedback sessions should identify my strengths and weaknesses and provide suggestions for improvement	.596
I want flexibility in consultation so that I can meet the teaching staff outside the set hours	.577
I want feedback sessions soon after publication of results of tests or assignments	.556
I want opportunities to consult the teaching staff at critical times (e.g., mid-semester exam, submission of assignments)	.542
I want feedback on my work to show me where I went wrong	.511
I expect the lecturing staff to treat me with courtesy and respect	.483
I prefer face-to-face contact with teaching staff rather than communicating with email	.475
Regular emails/notices informing of important course related matters are an effective way of communication	.471
Marking criteria should be made clear at the beginning and reinforced at regular intervals	.440
I want replies to my email messages within 2 days	.434
Components of the assessment should evaluate my knowledge, understanding and skills	.407
Course assessment requirements should be paced throughout the semester rather than being concentrated toward the end of the semester	.363
Any final exam should be worth no more than 60 per cent of the total assessment	.326
Factor 2: Lecturer, Teaching Approach and Contents	
I expect the lecturing staff to challenge and extend me intellectually	.702
I expect the lecturing staff to encourage me to think in new ways	.676
I expect the lecturing staff to teach in a way that stimulates my interest in the discipline	.646
The contents must be intellectually stimulating	.615
The contents must be intellectually challenging	.555
I expect the lecturing staff to draw on current research and development	.527
I want the tutor/demonstrator to encourage open discussion on theory and applications	.527
I expect the lecturing staff to teach in a way that increases my understanding of the discipline	.523
Different course components (e.g., lectures, lab sessions, tutorials and all parts of the assessment) must be well integrated and complement one another	.463
I like opportunities to ask questions	.462
There must a good mix of theory and applications	.452
I expect the lecturing staff to be enthusiastic and committed to their teaching	.424
I want the tutor/demonstrator to demonstrate problem-solving	.411

Table 3 continued

Factor 3: Active Participation and Engagement	
I like encouragement to solve problem in small groups	.672
I like group learning sessions	.669
I want the lecture sessions to emphasise the importance of consultation with the staff on a regular basis	.640
I want the lecture sessions to emphasise regular attendance at lab/tutorial sessions where applicable	.615
I want the lecture sessions to state clearly how the graduate attributes are achieved	.578
I like emphasis on active participation in problem-solving and class discussion	.480
The topics covered must be highly practical	.470
The topics covered must be highly relevant real world issues	.403
Factor 4: Presentation, Delivery and Focus	
I want the lecture handouts to be useful learning aids	.608
I want visual presentations using PowerPoint to be very effective learning aids	.568
I want the lecture sessions to focus on the central message embodied in each topic	.536
I want hard copies of lecture notes on every topic at or before the lecture	.501
I want the recommended text, if any, and other materials to give me a good understanding of the course	.493
I want the lecture sessions to clearly set out the learning objectives in each topic	.478
I want the lecture sessions to provide diagrams, graphs and charts to illustrate and explain concepts and their applications	.475
I want the lecture sessions to demonstrate applications of techniques and methods	.429
I want the lecture sessions to clearly set out the links among learning objectives of the course	.420
I want the lecture sessions to emphasise applications and examples	.406

4.2 Results from Econometric Analysis

Results presented in Table 4 suggest that the dependent variables varied according to a range of variables. Since the outcome variables were standardized (means of zero and standard deviation of unity) parameters are interpreted as effects from the mean by a unit of standard deviation (SD). Since one instrumental variable (OP) is for one endogenous variable (GPA), the estimation is exactly identified. The endogeneity test shows that GPA is endogenous in the equations for Lecturer, Teaching Approach and Contents, Active Participation and Engagement, and Presentation, Delivery and Focus but not in the estimation of Feedback, Communication and Assessment. We applied the robust standard error estimate to mitigate the potential issue of unknown heteroscedasticity.

The endogeneity test, proxied by the significance of the correlation coefficient of the error terms between equations 2 and 3, suggests that students' expectations about and preferences

for Lecturer, Teaching Approach and Contents, and Presentation, Delivery and Focus were significantly affected by unobserved characteristics of students (the endogeneity test rejected the null hypothesis of no correlation between the error term of equations 2 and 3 is rejected at 1% significant level).

Students with a high GPA ($>6.2/7$) had a lower **Lecturer, Teaching Approach and Contents** score by about one and half SD relative to those with a lower GPA (≤ 6.2). Students in the economics discipline had a higher score for this dimension by nearly .70 SD ($p < .01$) relative to those from the non-economics discipline. ESB students in the economics discipline had a lower score by .58 SD ($p < .05$).

Feedback, Communication and Assessment varied according to GPA ($p < .05$), sex ($p < .10$), and age ($p < .01$). Students with high GPA displayed a greater inclination toward Feedback, Communication and Assessment relative to those with lower GPA (by .57 SD, $p < .05$) as did students in the 20-25 age group by .36 SD ($p < .01$) relative to those aged ≤ 20 years. Male students displayed negative inclination relative to females (.36 SD, $p < .10$).

Active Participation and Engagement varied due to linguistic background. ESB students displayed a negative inclination toward this dimension than NESB students (by .63 SD, $p < .01$).

Presentation, Delivery and Focus varied due to GPA, which had a strong negative effect on this dimension (by 1.65 SD, $p < .01$) relative to those with a lower GPA.

Table 4: Determinants of dimensions of students' expectations and preferences domain: Results from econometric model with instrumental variable

Independent variable	Dependent variables							
	Lecturer, Teaching Approach and contents		Feedback, Communication and Assessment		Active Participation and Engagement		Presentation, Delivery and Focus	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
High GPA ($>6.2 = 1$)	-1.497***	0.000	0.572**	0.023	-0.407	0.393	-1.645***	0.000
Sex (male=1)	-0.300	0.299	-0.361*	0.089	-0.049	0.800	-0.334	0.157
Linguistic background (English=1)	0.311	0.143	0.172	0.298	-0.628***	0.000	-0.103	0.558
Upper undergraduate (lower undergraduate = 0)	0.083	0.538	0.144	0.242	-0.115	0.401	0.080	0.557
Honours & postgraduate (lower undergraduate = 0)	0.188	0.431	-0.147	0.473	-0.088	0.688	-0.304	0.247
Age group 20-25 years	0.053	0.705	0.359***	0.004	0.032	0.798	-0.217	0.152
Age group > 25 years	0.343	0.295	0.355	0.162	0.266	0.347	0.574	0.138
Discipline (Economics=1)	0.696***	0.005	0.269	0.195	-0.119	0.588	-0.103	0.648
Linguistic background x Sex	-0.148	0.615	0.107	0.639	0.277	0.205	-0.285	0.248
Discipline x Sex	-0.156	0.486	0.070	0.726	0.190	0.350	0.192	0.372
Linguistic background x Discipline	-0.584**	0.032	-0.284	0.201	-0.025	0.917	0.161	0.514
Intercept	0.148	0.462	-0.250	0.119	0.513***	0.005	0.663***	0.000
δ	1.141***	0.000	0.979***	0.000	0.963***	0.000	1.104***	0.000
ρ	0.837***	0.000	-0.214	0.118	0.079	0.778	0.756***	0.000
Number of observations	506		506		506		506	
BIC	1,719.318		1,747.539		1,741.861		1,728.975	
AIC	1,609.428		1,637.649		1,631.971		1,619.085	
Log-Likelihood	-778.71		-792.82		-789.99		-783.54	

*** $p \leq .01$; ** $p \leq .05$; * $p \leq .10$.

As stated in Section 2, we conducted a test for the sensitivity of results by excluding all international students to avoid the complexities of converting their scores to OP. Results of the sensitivity analysis using domestic students only showed that the conversion of international academic scores to OP had little effects. Both the significance levels and magnitude of the estimated parameters were similar to those in reported in Table 4. For brevity, this paper does not present the results of the sensitivity analysis.

4.3 Discussion

Students' preference for flexibility in feedback and communication in the present study was consistent with aspects of staff availability outside class hours in the Moore et al. (2008) study.

In the present study, NESB students' preferences align with Johnson and Kumar (2010) who found that Indian students in Australia preferred group learning (Active Participation and Engagement). The findings of the present study cast some shadow over those of Shank et al. (1996) who compared expectations of Australian and American students only and found the former to hold higher expectations. Shank et al. (1996) implicitly assumed the homogeneity within respective populations and assumed away any differences in expectations by sub-populations (e.g., ESB/NESB).

The present study did not find any evidence of students' academic performance being a significant predictor of expectations and preferences in contrast to Moore et al. (2008) who found that high performing students expected higher credentials of the staff. In contrast, our findings indicate that their high school level performance was a significant predictor of three of the four dimensions of students' expectations and preferences domain. This is somewhat analogous to pre-course aptitude being a significant predictor of student performance at subsequent levels as evidenced by a recent study (Tse & Tam, 2017) and prior knowledge of economics and higher level of mathematics affecting student learning in university level principles of economics course (Mallik & Shankar, 2016).⁴

⁴Alauddin et al (2016) found university entry score (IV) to be a significant predictor of student engagement in institutional process of teaching and learning.

CONCLUSIONS AND IMPLICATIONS

5.1 Conclusions

The results found support for two research sub-questions. First, students' responses can be categorised into a small number of representative dimensions that reflected students' patterns of response regarding their expectations and preferences in the university teaching and learning process. Second, the dimensions varied according to a range of variables that typified diversity of the student population.

Factor analysis revealed four dimensions: (1) Lecturer, Teaching Approach and Contents; (2) Feedback, Communication and Assessment; (3) Active Participation and Engagement; and (4) Presentation Delivery and Focus.

- Lecturer, Teaching Approach and Contents emphasised students' focus, amongst other things, on Lecturer's expertise in the relevant field, the intellectual challenge and stimulation that s/he was able to provide, and the quality and relevance of course content.
- Feedback, Communication and Assessment reflected students' preference for clear explanations of theories illustrated with examples, critical and analytical depth, readily recognisable learning objectives and linkage among assessment components. Communication with and feedback from teaching staff, the nature and quality of feedback, consultation, and the availability of lecture materials underpinned Communication and Feedback.
- Active Participation and Engagement related to maximising students' engagement and enfranchisement in the teaching and learning process.

- Presentation, Delivery and Focus related to quality handouts and other reading materials as useful leaning aids, quality visual presentation, central message embodied in a topic, and applications of techniques and methods with illustrations.

Overall, the research supports the main research question that students' expectations and preferences in teaching and learning differ according to a range of variables underpinning the diversity within the student population, at least to the extent that the sample reflects the wider student body.

The study's contribution lies in developing a 59-item scale on students' expectations and preferences; reducing student responses to four representative dimensions; and identifying key determinants of these dimensions. This is the first comprehensive study of its kind.

5.2 Implications

The diversity of the student population and attendant dimensions of students' expectations and preferences identified in this study have implications for the instructor and teaching and learning committees within any academic unit e.g., a School.

For instructors, items relating to the Lecturer, Approach to Teaching and Contents draw attention to the importance for student of an instructor's ability and skill to provide intellectual and analytical rigor that challenges students to think in new ways, high quality content that incorporate latest developments in the field and assessment throughout the semester. This suggests that students anticipate that instructors will ensure the relevance of methods and techniques to practical (real world) issues (items underlying Lecturer, Approach to Teaching and Contents, and Active Participation and Engagement). Abstract theorisation without relevance to these applications might lead some students to disengage from the teaching-learning process.

The present results also reflect the importance of instructors providing timely communication and feedback; conveying the central messages of the course or topic, creating an environment for active student participation, and extending issues discussed in classes.

Given the labour-intensive nature of providing constructive feedback on written work and of ensuring the timely release of results of tests and assignments there is a challenge for teaching and learning committee units to provide appropriate administrative support to enable instructors to meet student expectations.

Given the importance of NESB student enrolments in the present university climate it would seem relevant to ensure that instructors can draw from departmental or university resources to respond to the diverse needs of this student group. Teaching and learning committees might gain valuable insights into their own students' expectations and preferences and seek to identify areas for improvement, perhaps as an ongoing process.

As the student responses in the present study have been collected within a research-intensive university one might argue that the sample does not necessarily reflect student characteristics in other universities. While this is admitted, it also provides an opening for continued research in the area, within Australia and beyond.

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