

Measuring Students' Attitudes to Economics Education: A Factorial Analysis Approach

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ABSTRACT The importance of economic education goes far beyond the goal of improving an understanding of the basic principles of supply and demand and the workings of our economy. Economic attitudes and opinions should be a topic of interest to teachers of economics, whether they teach it as a separate course or integrate it into the existing curriculum. This study explores students' perceptions of economics education by using an exploratory factor analysis (EFA). An attitude towards economics education (ATEE) scale was constructed to collect data. Seven factors were extracted by using a rotated factor matrix. Female students outperformed male students pertaining to continuous assessment marks. Final examination results revealed that male students' achievements were significantly higher than female students.

INTRODUCTION

The importance of economics education goes far beyond the goal of improving an understanding of the basic principles of supply and demand and the workings of our economy. Students develop perceptions of their economic world at an early age, which, as they progress through the educational process, develop into attitudes and opinions about the subject of economics. Intended or not, teachers influence the direction of attitude development. By finding ways to teach students more about economics, teachers are contributing to improved attitudes toward the subject. By teaching basic economic concepts and applying them to classroom discussions of economic issues and institutions, teachers are not indoctrinating students, but providing a knowledge foundation for more informed student opinions and decision-making on vital issues. The more economics concepts students know, the more they like and value the subject and the more information they have about economic issues. Students who do not get the opportunity to learn economics and increase their economic understanding will probably never take much interest in the subject or in their economic world.

Emanating from the above, this paper conceptualised attitudes and opinions towards economic understanding. Secondly, research studies conducted on students' attitudes towards economics are reviewed. Thirdly, the

purpose of conducting this research study is explained. Furthermore, the research methodology and rationale for using an exploratory factor analysis is described. Lastly, results are reported and limitations are highlighted for further investigation.

Conceptualising Attitudes towards Economic Understanding

We are living in a complex world which is faced with enormous economic challenges. Understanding this world requires education in basic economic concepts and their application to a multitude of economic issues. As students grow and learn, economic attitudes and opinions take shape and influence thoughts and actions over a lifetime. Consequently, teachers need to know the nature of the relationship between attitudes and opinions in economics learning.

According to Soper and Wilstad (1983), 'economic attitudes' are the subject of considerable attention by economic teachers who have become interested in unraveling the mystery of non-cognitive behaviour in the economics domain. The above mentioned authors contend that the effect may be as important as cognition in determining human behaviour. They believe for this reason alone, academic concern about the subject is amply justified. Even if individuals understand the consequences of economic actions and policies, it is still possible that they may act in (econo-

mically) 'irrational' ways, perhaps because their economic attitudes run counter to their cognitive understanding. Attitudes as a psychological construct have been defined in many ways over the years. Triandis (1971), as well as Walstad (1987), offer a description to cover the central ideas used by attitude theorists: "An attitude is an idea charged with emotion which predisposes a class of actions to a particular class of social situations" (p. 2). Attitudes, therefore, consist of three interrelated components: (a) a cognitive component that helps the person categorise the topic or issue under study; (b) an affective component that includes the emotional or motivational evaluations of the category; and (c) a behavioural component which indicates the tendencies or predisposition to action. Moreover, Walstad and Rebeck (2001) argue that attitudes combine with facts to produce opinions. These authors mention that attitudes also determine what facts will be selected in forming opinions. Research studies reveal that attitudes are more basic and less cognitive than opinions. The authors believe that students are often aware of their opinions on a topic but not their underlying attitude toward the topic (Breedon and Lephardt 2005; Becker and Watts 2001; Shen and Shen 1993). The researcher's view is that opinions are more transitory than attitudes and often change as facts or information available changes. In summation consequently, opinions are defined as general conclusions that are held, but not with full certainty. Many opinions are related to a given attitude. In this study, students' views on why and how they think about the subject is explored. In line with this view, I argue that economic attitudes and opinions should be a topic of interest to teachers of economics, whether they teach it as a separate course or integrate it into the existing curriculum. On the one hand, it is thought that effect may be more important than cognition in determining human behaviour. Even if these economics education students understand the consequences of economic actions and policies, they may still act 'irrationally' (from an economic perspective), perhaps because their economic attitudes and opinions run counter to their economic understanding. In addition, willingness to learn economics may depend on a positive attitude towards the subject. Economic understanding may be the most vital factor in shaping economic attitudes and opinions of

students. Therefore, if a teacher is concerned, as the researcher is, with developing more positive attitudes towards the subject of economics, economic institutions or issues, one effective strategy would be to increase student economic knowledge. Should this be true, parents, school districts or provinces that want to shape economic attitudes and opinions might consider recommending or requiring economics instruction for students as a means of achieving this objective. To achieve this objective, previously economics and management sciences (EMS) was introduced as one of the learning areas for the intermediate phase (grades four to six) and the senior phase (seven to nine) in the National Curriculum Statement (NCS). It seems that with the introduction and implementation (phasing in from 2012 and onwards) of the revised national curriculum and assessment statement policy (NCAPS), the National Department of Education (Department of Education 2010), is re-prioritising economics and management science (EMS) education. This learning area will be phased out as from 2011 in the intermediate phase and will be introduced only in the senior phase in 2012, meaning that the importance of economics education is lessened compared to mathematics and science education. This will definitely narrow down students' possibilities and opportunities for strengthening their attitudes towards and opinions of economics understanding.

Research Studies Exploring Attitude to Economics Education

Emanating from conceptualising attitudes and opinions on economic understanding, several research studies were conducted on the phenomena. Karstensson and Veddar (1974), as well as Soper and Walstad (1983) conducted studies on measuring students' attitudes towards economics. They found a statistically significant and positive relationship between students' pre-course attitude and the course grade in economics when scrutinising students' interest in the subject and its usefulness to college and post-college work. Furthermore, Hodgins (1984) states that attitudes towards economics could also be influenced by informational messages about performance in economics. Positive attitudes and perceptions towards economics can be created if students' seniors provide constructive

information on the subject and perform well in economics. This can also lessen the level of apprehensiveness so that students can enjoy the lessons more. As a result, it seems as if the less apprehensive the students are, the more they will enjoy the subject and the better they will perform in economics. Moreover, research conducted by Benedict and Hoag (2002) found that more than 38 percent of their student sample was worried about taking economics. Male students were found to be less worried than female students and business students were found to be less worried compared to non-business students. They concluded that the main reason for student anxiety is the course reputation (students develop anchors about their potential success in economics from seniors' information). O'Brien and Ingels (1987) conducted a study by measuring young people's attitudes and values with respect to economic issues. They described the substantive considerations that directed the development of test items and provide indicators of the reliability and validity of the proposed instrument. The outcome of the research was that the *Economics Values Inventory (EVI)* is recommended as an effective measuring instrument in experimental evaluations of group changes in economic attitudes and values, as well as in other settings in which young people's economic attitudes and values are of interest. Several scholars discovered through their studies a positive and significant relationship between exposure to high school economics to students' grades in college principles courses (Breedon and Lephardt 2005; Durden and Ellis 1995; Chizmar et al. 1985; Ingels and O'Brien 1985). One particular study entitled, *Economic Education: Five New Initiatives* investigated by Salemi et al. (2001) reported on the importance of economic education for student empowerment and economic literacy. Nevertheless, in contrast to the above, Ballard and Johnson (2004) and Reid (1983) demonstrated that previous studies in economics had a negative or no impact at all on students' performance. Phipps and Clark (1993) implemented a factor analysis to a twenty eight-item *Survey on Economic Attitudes (SEA)* in order to gain insight into the dimensions of attitude towards economics. Findings indicated that the application of a factor analysis was an appropriate method for determining attitude dimensions, according to the results of the

analysis. Results revealed that there were three dimensions which influenced directly high school students' attitudes toward economics: 1) enjoyment of economics as a subject; 2) usefulness of economics; and 3) difficulty of economics. The results also showed that female students enjoyed economics relatively less than male students, but were not significantly different from males regarding the perceived difficulty or attitude toward usefulness. Ballard and Johnson (2004) reported that the mathematics test scores had a strong and significant effect on performance in the economics course. The results were further confirmed when they found that students who were required to take a remedial mathematics course did considerably worse in the economics course than students who were not required to take the remedial mathematics course. The results of this study are similar to other research studies conducted by Bachan and Reilly (2003) which found that performance in the *General Certificate of Secondary Education (GCSE)* mathematics exercises a strong influence on A-level achievement in economics. Findings revealed that it is also very important for students to have the right attitudes and perceptions toward economics courses in order for them to excel in economics. These would help them to gain knowledge of economics in a more enjoyable manner and ultimately ease the learning process. A later study conducted by Bachan and Reilly (2003) showed that if business studies candidates had studied economics, almost 40% who achieved a grade C or better in the business subject, would not have done so in economics. On the other hand, 12% more economics candidates would have obtained a grade C or better if they had taken business studies. These results in fact, illustrate the greater difficulty of economics as a subject. Bachan and Barrow (2004), as well as Tregear et al. (2007) examined the role of comparative subject difficulty and student aptitude in influencing the choice between economics and business studies at A-level. The research revealed that if A-level students were given the choice between business studies and economics, only students with more ability in terms of their average GCSE score and with mathematics, are likely to opt for economics. Mogab and Sellers (2004), as well as Oliver (2008) contend that in order to perform well in economics, it is crucial for students to have four

cognitive skills (knowledge, comprehension, application and analysis). They also presumed the introductory economics courses have become one of the most difficult courses because of the three aspects needed to master the subject: theory, analysis and application. In economics education literature, most of us can find a large body of research underlining the importance of mathematics skills and basic economics that should be mastered by students in order to do well in economics courses.

The Aim of the Study

The aim of the study is *to design an instrument to measure student teachers' perception of economics education*. To achieve this, a 45-item attitude towards economics education (ATEE) instrument was designed to obtain insight into the dimensions of attitude of students' perceptions towards the subject. For the purpose conducting this study, the following questions are formulated:

- ♦ Why using an exploratory factor analysis (EFA) and how many factors were extracted from the ATEE instrument?
- ♦ How reliable were the extracted factors from the ATEE scale? and
- ♦ Comparison to gender, are there any significant differences between male and female students' attitudes towards economics education and how do they performed in the final examination?

RESEARCH METHODOLOGY

Research Design

A quantitative method was used to explore student teachers' views and experiences regarding their attitudes and opinions toward economics education. As such, I collected and analysed primary data from the questionnaires (Teddle and Tashakkori 2009; Creswell 2009; Myers 2004).

Sampling

Post Graduate Certificate of Education (PGCE) and Baccalaureus of Education (B Ed) student teachers were identified for the investigation. Only 128 PGCE and B Ed student teachers were registered for module ECT 122,

Teaching Methods and Teaching Media, were selected as the proportional stratified sample for the research. The sample consisted of Black and White final year PGCE and B Ed subject method students. Both groups were taught by the researcher over a 12-week period of two contact sessions of 55 minutes per week for the second semester. The sample consisted of thirty-five percent (35%) Black and sixty-three percent (63%) White students with 69.5% of the students females (N=89) and 30.5% males (N=39). Both groups were taught by the researcher over a 12-week period of two contact sessions of 55 minutes per week for the second semester.

Data Collection Instrument

Here are discussed the substantive considerations that directed the development of the 45-item questionnaire and provide indicators of the reliability and validity of the proposed instrument. There are a number of matters that require some discussion before a factor analysis is conducted. The first aspect is the methodological issues that need to be considered, including the number of variables to be included in the instrument for the study and the size of the sample to be used. Additionally, there are at least four measured variables for each common factor which are expected to emerge from the data analysis (Creswell 2009; O'Brein and Ingels 1987). Regarding the sample size, there is considerable debate in the literature as to what constitutes an adequate sample size. However, Gorsuch (1997) suggests an item: case ratio of 1:5 with a total sample size of at least 100. Furthermore, Teddie and Tashakkori (2009) propose that when the communalities of the measured variables are high and when at least three or four variables represent each common factor, then a sample size of 100 can produce an accurate estimate of the population parameters. Another methodological issue concerns the choice of whether to carry out an exploratory or a confirmatory factor analysis. An exploratory approach is aimed at determining what and how many constructs underlie the variables in the questionnaire and is used when there is insufficient evidence available to predict any set of constructs in advance. In addition, Hastings et al. (2004) mention that an exploratory factor analysis is more familiar to researchers and is consequently more easily understood.

Based on preliminary readings of previous literature views, a 45-item questionnaire, the ATEE scale was constructed to gather student teachers' perceptions of the subject of economics, as well as some demographic information. The items which were a combination of positive and negative statements were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). During the data entries into the statistical software, negative statements were reversed into positive statements; therefore, a higher score for each item will imply a more positive attitude towards economics education. The final examination paper consisted of three main sections: multiple-choice questions - 10 marks; structured questions including calculations and concepts - 30 marks; and essays - 10 marks. Respondents were requested to give their student number on the questionnaire so that each questionnaire could be matched with their final examination score at the end of the semester. The Statistical Package for Social Sciences (SPSS), Version 16.0 was used to run the exploratory factor analysis.

EXPLORATORY FACTOR ANALYSIS (EFA)

The Purpose and Procedures for Using Factor Analysis

The aim of factor analysis is to summarize the interrelationships among a set of variables in a concise but conceptually accurate manner. The procedure involves three steps. The first step is preparation of a correlation matrix for all variables being analyzed. Step two is extraction of the initial factors. New variables are created based upon the interrelationships determined in the correlation matrix. The new, composite variables (factors) are linear transformations of the original variables.' The third step is rotation of the factors to a terminal solution. In this study, a varimax rotation procedure was employed to generate factors that were orthogonal. The factor analysis model used in the present study was the truncated principal components model. In the full principal-components model, principal factors are extracted from the correlation matrix in which unities are the diagonal elements (Gorsuch 1997).

EFA Motivation for the Statistical Analysis

EFA was selected because it does not impose a specific pattern on the data in an a priori manner.

Instead, it provides an opportunity to identify a factor's inclusion substantially. EFA was warranted in this study as no previous research has examined the factor structure to measure students' perceptions of economics education by using an exploratory factor analysis and reliability analysis. The EFA was conducted to identify and interpret the underlying and common factors of the respondents' reasons that influence their perceptions of economics education. According to Gorsuch (1997) EFA explains the variation in the observed variables in terms of the underlying latent factors. The first step required to perform a factor analysis is to determine whether it is actually necessary to perform it on the data. This is done by testing the adequacy with which the data can be sampled. The measuring of sampling adequacy involves determining the suitability of individual variables for use in the factor analysis and this was evaluated using the Kaiser-Meyer-Olkin (KMO) (Bernaus and Gardner 2008; Cohen et al. 2009; Leedy and Ormod 2001).

RESULTS

Calculation of the Mean and Standard Deviation Scores

The mean and the standard deviation for the 45 items are shown in Table 1. Item 7: 'My level of calculations used is appropriate to draw and analysed data (2.07)'; item 4: 'There are not many topics to be learnt (2.19)' and item 10: 'I like economics since it is an easy subject (2.07)' are the three items with the lowest scores. The highest mean score is associated with item 23: 'economics will be utilised in my professional teaching career (4.98)'. The result implies that students have a rather positive perception about the usefulness of economics education in their future professional teaching career. Student teachers (educational economists) were able to relate the application of economics to their field of study, even though they were not from the economics and management faculty. Nevertheless, their main concern was their limited or lack of knowledge regarding economics, before taking up the subject; a lot has to be learnt and economics is perceived as a difficult subject.

Table 1: Means (M) and Standard Deviations (SD) of scores on the ATEE-scale (N=128)

<i>Statement regarding attitude toward economics education</i>	<i>Mean</i>	<i>SD</i>
1. Economics as a subject is not difficult.	3.09	1.189
2. There are not many graphs to be learnt.	3.00	1.334
3. The graphs help me to understand 'real world' issues better.	4.55	0.911
4. There are not many topics to be learnt in this module.	2.19	1.328
5. It is easy to understand economic concepts and theory.	3.37	0.681
6. My level of Economics used is appropriate to apply to my teaching practice.	4.00	1.451
7. My level of calculations used is appropriate to draw and analyse data.	2.07	0.781
8. I understand economic formulas and can apply them.	3.55	0.671
9. Most students will find Economics as a subject, easy.	3.11	0.881
10. I like Economics since it is an easy subject.	2.07	1.322
11. Economic subjects are very interesting and enjoyable.	4.78	1.361
12. I am capable of understanding this subject.	3.89	0.783
13. I can pass Economics even though there are many cases of failure.	3.56	0.671
14. I feel comfortable with the subject of Economics.	4.33	0.823
15. I enjoy Economics as a subject because it challenges my thinking skills.	4.71	0.928
16. I do not feel nervous or frustrated during Economics tests or exams.	3.55	1.051
17. I had a basic knowledge of Economics prior to taking the subject.	3.04	1.261
18. I have a strong mathematical background.	3.59	1.122
19. I am good at the English/Afrikaans language.	4.33	0.781
20. Knowledge about Economics from other sources helps my understanding.	4.00	0.923
21. Knowledge about the economy will help me get a suitable job in the future.	4.56	0.891
22. Economics as a subject is relevant to me.	4.69	0.871
23. Economics will be utilised in my professional teaching career.	4.98	1.211
24. Economics will be very useful in my future career.	3.76	1.011
25. Economics will be very useful in my everyday life.	3.23	1.122
26. I will be using Economics throughout my life.	4.44	1.441
27. Economics makes me think about contemporary issues.	3.79	0.675
28. I enjoy reading articles on economic topics.	3.29	1.022
29. I usually prepare before coming to tutorials.	3.03	0.881

Table 1: Contd...

<i>Statement regarding attitude toward economics education</i>	<i>Mean</i>	<i>SD</i>
30. I generally do the set reading before tutorials.	3.55	0.971
31. I usually set out to thoroughly understand most topics.	3.81	1.581
32. I really enjoy the theoretical content of Economics.	3.07	1.322
33. I get a lot of satisfaction from studying Economics.	3.78	1.361
34. My lecturer was good at explaining things (clear instructions).	3.19	0.783
35. My lecturer made it clear where the subject was going (framework/scope).	3.06	0.671
36. My lecturer gave me helpful and constructive feedback on my progress.	3.33	0.823
37. My lecturer tried hard to make the subject interesting (economic games).	3.71	1.428
38. I value what other students have to say in class, particularly regarding cooperation.	3.05	1.351
39. I worked consistently throughout semester.	3.14	1.061
40. I am better at solving economic problems.	3.59	1.122
41. It was easy to know what was expected of me.	3.33	0.781
42. I have learned to think more critically.	3.00	0.723
43. I am better at solving economic problems.	2.56	0.891
44. I am better at working collaboratively.	3.69	0.771
45. I have learned to discuss economic concepts.	2.03	0.681

Mean scale*: 5 = Strongly agree 4 = Agree 3 = Uncertain 2 = Disagree 1 = Strongly disagree

Rotated Factor Matrix and Reliability Analysis of the ATEE Scale

Factor analysis was applied to a 45-item ATEE scale. The Kaiser-Meyer-Olkin (KMO) coefficients of sampling adequacy indicate that factor analysis is appropriate for the ATEE scale data. The measure of sampling adequacy Kaiser-Meyer-Olkin (KMO) was 0.846 and Bartlett's Test Sphericity was significant, $\chi^2(N=128 = 3126.77, df=325, p < 0.000)$ indicating that the sample and correlation matrix were appropriate. The rotated factor matrix which is a matrix of the factor loadings for each variable onto each factor is shown in Table 2. Loadings of less than 0.399 are not shown in the rotated factor matrix since they do not represent substantive values (Cohen et al. 2009). The four interpretable factors

Table 2: Rotated factor matrix and reliability analysis of the ATEE scale (N=128)

Primary factors	F1	F2	F3	F4	F5	F6	F7
<i>Factor 1: Value of Economics as Subject ($\alpha = 0.871$)</i>							
21. Knowledge of the economy will help me get a suitable job in the future.	0.785						
25. Economics will be very useful in my everyday life.	0.731						
23. Economics will be utilised in my professional teaching career.	0.710		0.499				
24. Economics will be very useful in my future career.	0.591						
22. Economics as a subject is relevant to me.	0.589						
3. The graphs help me to understand better.	0.532						
26. I will be using Economics throughout my life.	0.486						
10. I like Economics since it is an easy subject.	0.469						
<i>Factor 2: Difficulty of Economics as a Subject ($\alpha = .861$)</i>							
15. I enjoy the subject of Economics		0.691					
17. I had basic knowledge of Economics prior to taking this subject.		0.631					
8. I understand economic formulas.		0.576					
9. Most students will find economic subjects easy.		0.530					
1. Economic subjects are not difficult.		0.491					
5. Easy to understand economic concepts and theory.		0.482					
2. There are not many graphs to be learnt.		0.476					
<i>Factor 3: Knowledge and Skills Required for Economics Subject ($\alpha = 0.855$)</i>							
6. Level of English used is appropriate.			0.779				
19. I am good at the English/Afrikaans language.			0.633				
7. I will definitely apply economic concepts in my praxis.			0.552				
12. I am capable of understanding this subject.			0.512				
13. I can pass Economics even though there are many cases of failure.			0.487				
18. I have a strong mathematical background.			0.475				
20. Knowledge about Economics from other sources helps my understanding.			0.489				
27. Economics makes me think about contemporary issues.			0.465				
<i>Factor 4: Enjoyment of Learning Economics ($\alpha = 0.736$)</i>							
16. I do not feel nervous or frustrated during Economics tests or exams.				0.725			
14. I feel comfortable with Economics as a subject.				0.569			
11. Economic subjects are very interesting and enjoyable.				0.567			
4. There are not many topics to be learnt.				0.482			
28. I enjoy reading articles on economic topics.				0.468			
<i>Factor 5: Application of Economics Knowledge ($\alpha = 0.816$)</i>							
29. I usually prepare before coming to tutorials.					0.775		
30. I generally do the set reading before tutorials.					0.741		
31. I usually set out to thoroughly understand most topics.					0.719		
32. I really enjoy the theoretical content of Economics.					0.591		
33. I get a lot of satisfaction from studying Economics.					0.589		
<i>Factor 6: Performance of Lecturer ($\alpha = 0.755$)</i>							
34. My lecturer was good at explaining things (clear instructions).						0.799	
35. My lecturer made it clear where the subject was going (framework / scope).						0.761	
36. My lecturer gave me helpful and constructive feedback on my progress.						0.610	
37. My lecturer tried hard to make the subject interesting (economic games).						0.591	
41. It was easy to know what was expected of me.						0.569	
<i>Factor 7: Cooperative and Collaborative Learning ($\alpha = 0.766$)</i>							
38. I value what other students have to say in class particular to cooperation.							0.885
39. Our group worked consistently throughout the semester.							0.831
40. I am better at solving economics problems.							0.760
42. I/ my group have learned to think more critically.							0.691
43. I am /my group is better at solving economics problems.							0.689
44. I am better at working collaboratively in a group.							0.532
45. I have learned to discuss economic concepts.							0.506

accounted for 35.9%, 6.04%, 4.69% and 3.62% of the variance in the data for a total of 50.25% (before rotation) and 15.09%, 13.84%, 12.84% and 8.49% respectively (after rotation). Factor 1 is labelled: '*Value of economics as a subject*' with loadings from 0.469 to 0.785. It includes items such as 'Knowledge of the economy will help me get suitable job in the future (0.711)'; 'economics will be very useful in my everyday life (0.705)' and 'economics will be utilised in my professional teaching career (0.656)'. This factor which has the highest percentage of explained variance implies that non-business students regard knowledge of economics as essential in their future career and everyday life, even though they were majoring in wood technology or office management. Factor 2 is labelled: '*Difficulty of economics as a subject*' with loadings from 0.476 to 0.691. It includes items such as 'I enjoy economics as a subject. (0.693)'; 'I understand economic formulas (0.557)' and 'Most students will find economic subjects easy (0.530)'. Factor 3 is labelled: '*Knowledge and skills required in economic subjects*' with factor loadings ranging from 0.465 to 0.779. Among the items included are: 'Level of English used is appropriate (0.767)'; 'I am good at the English language (0.609)' and 'Level of Mathematics used is appropriate (0.569)'. Factor 4 is labelled: '*Enjoyment of learning economics*' with factor loadings from 0.460 to 0.725. Items included are: 'I do not feel nervous or frustrated during economics tests or exams (0.725)'; 'I feel comfortable with economics as a subject (0.569)' and 'economic subjects are very interesting and enjoyable (0.468)'. There were four items loaded on two factors. 'The graphs help me to understand better' and 'I like economics since it is an easy subject' were loaded on both Factor 1 and 3. 'Easy to understand economic concepts and theory'; and 'I will definitely apply economic concepts in my praxis' were loaded on both Factor 2 and 3. Item 20 is dropped from the list due to a low factor loading. Factor 5 is labelled as '*Academic application*' with factor loadings 0.775 to .0589. Items included: '29. I usually prepare before coming to tutorials'; '30. I generally do the set reading before tutorials'; '31. I usually set out to thoroughly understand most topics'; '32. I really enjoy the theoretical content of economics' and '33. I get a lot of

satisfaction from studying economics'. Factor 6 is named as '*Performance of lecturer*' with factor loadings 0.799 to 0.569. Items included are: 'My lecturer was good at explaining things (clear instructions) (0.799)'; and 'It was easy to know what was expected of me (0.569)'. Factor 7 is identified as '*Cooperative and collaborative learning*' with factor loadings 0.885 to 0.508. Items included are: 'I value what other students have to say in class (0.885)'; and 'I have learned to discuss economic concepts (0.508)'.

Based on the data presented in Table 2, the reliability analysis was carried out on all items in the ATEE scale as well on the seven extracted factors. Reliability which describes the internal consistency of a set of items was measured by Cronbach's Alpha and item-total correlations. Factor 1 ($\alpha = 0.871$) is labeled: 'Value of economics as a subject' and consisted of eight indicators with the strongest variable is 'Knowledge of the economy will help me get a suitable job in the future ($\alpha = 0.785$)'. Factor 2 ($\alpha = 0.861$) is labeled: 'Difficulty of economics as a subject' with seven items and the strongest variable is 'I enjoy the subject of economics ($\alpha = 0.691$)'. Factor 3 ($\alpha = 0.855$) is labeled: 'Knowledge and skills required in economic subjects' with eight items and the strongest variable is 'Level of English used is appropriate ($\alpha = 0.779$)'. Factor 4 ($\alpha = 0.736$) is labeled: 'Enjoyment of learning economics' with five items loadings and the strongest variable is 'I do not feel nervous or frustrated during economics tests or exams ($\alpha = 0.725$)'. Factor 5 ($\alpha = 0.816$) is labeled as 'Application of economic knowledge' with five loadings and 'I usually prepare before coming to tutorials (is the strongest response ($\alpha = 0.775$))'. Factor 6 ($\alpha = 0.755$) is named as 'Performance of lecturer' with five items loaded on this factor and the strongest item response was 'My lecturer was good at explaining things ($\alpha = 0.799$)'. The last Factor 7 ($\alpha = 0.766$) is identified as 'Cooperative and collaborative learning' with seven loadings and the strongest response was 'I value what other students have to say in class particular to cooperation ($\alpha = 0.885$)'. In general, reliabilities less than .60 are considered to be moderate, those in the 0.70 acceptable, good and those over 0.80 excellent (Cohen et al. 2009). As expected, all seven factors were moderately positive correlated with one another according to the attitude of students.

Table 3: ATEE subscale Means (M), Standard Deviations (SD) and Cronbach Alpha Coefficients of the factors (N=128)

<i>Seven factors exacted</i>	<i>Mean</i>	<i>SD</i>	<i>α</i>
Value of Economics as a subject	4.558	3.641	0.871
Difficulty of Economics as a subject	2.587	3.729	0.861
Knowledge and skills required	4.333	4.788	0.855
Enjoyment of learning Economics	4.234	2.895	0.736
Application of economic knowledge	3.561	5.667	0.816
Performance of lecturer during contact sessions	4.110	2.778	0.755
Cooperative and collaborative learning	4.822	3.659	0.766

Referring to Table 3, students tend to agree or showed positively the value of economics in their future careers and everyday life (given the mean of Factor 1 = 4.558 which is better than 3 (neutral point) on the 5-point Likert scale. The same observation is evident for knowledge and skills where students tend to agree on the perception that they should possess economics knowledge and skills required in terms of teaching practical skills. Nevertheless, students tend to agree that economics is somewhat difficult, but agree that they enjoy learning about economics. These results revealed that student teachers, who participated in this study, were positive towards economics education.

Comparison between Male and Female Students' Attitude and Achievements towards Economics Education

An independent sample t-test was performed on the mean score for each of the seven factors to compare the attitudes towards economics education between gender and passed-failed students. Table 4 shows the comparison between male and female students.

Based on the data presented in Table 4, the p-value for each of the seven factors is greater than 0.05. The results showed that there is no evidence that there is a difference in the perception of male and female students on the four dimensions of attitudes towards economics education. This implies that students perceived that economics education is a valuable and important subject. Results revealed that female students performed better in continuous assess-

Table 4: Comparison of male and female students (N=128)

<i>Four factors exacted</i>	<i>Mean (Male)</i>	<i>Mean (Female)</i>	<i>t-value</i>	<i>p-value</i>
Value of Economics	4.122	4.412	-0.355	0.782
Difficulty of Economics as a subject	2.216	2.365	-0.124	0.823
Knowledge and skills required	4.523	4.103	0.112	0.881
Enjoyment of learning Economics	4.264	4.534	-0.744	0.349
Academic application	4.001	4.322	0.561	0.331
Performance of lecturer	3.781	3.982	0.323	0.781
Cooperative and collaborative learning	4.199	4.662	0.110	0.722
Continuous Assessment (CASS)*	57.9	64.0	4.650	0.000
Final Examination scores*	72.0	58.0	4.320	0.000
Overall ECT 122 final results	68.9	60.9	4.119	0.000

Note: *(Continuous Assessment mark = 50% weight)
* (Final examination mark = 50% weight)

ment (CASS)* mark (64.0%) which is greater than male students in the subject. Furthermore, male students performed better in the final examination mark (72.0%) than female students. The final accumulated CASS mark (50% weight) of the final pass mark for the ECT 122 module comprised one modular test (50 marks), a group research project (25 marks), individual assignments (25 marks), two group role-playing activities (30 marks) and creative writing (20 marks). Gender was factorised and a comparison between male and female students' achievements in economics education were analysed. According to Table 4, male students strongly agreed that factor 2, *Difficulty of economics as a subject* and factor 3, *Knowledge and skills required*, was very important to them to perform well in the subject. They outperformed female students in the final module examination results. On the other hand, female students strongly agreed that the following five factors: *Value of economics*, *Enjoyment of learning economics*, *Academic application*, *Performance of lecturer* and *Cooperative and collaborative learning* impacted on their attitude towards the subject. The female students outperformed the male students pertaining to CASS marks (see Table 4 results). With regard to the final examination results, male stu-

dents' achievements were significantly higher than female students' (p-value < 0.05).

Regression Analysis of Academic Performance in Economics Education

Based on the results in the Table 5, a summary of a regression analysis of attitude of students in the subject were calculated pertaining to the significant of predictors and dependent variables.

Table 5: Significant level in regression analysis on academic performance in economics education (N=128)

Model	Sum of squares	df	Mean square	F	Sig.
Regression	7969.399	3	3466.89	693.113	0.000 ^a
Residual	196.223	566	76.41		
Total	8165.622	569			

^aPredictors: (Constant); Difficulty of subject; Knowledge and skills required; Academic application.
Dependent variable: Level of achievement.

Referring to Table 5, the analysis of variance is highly statistically significant (0.000), indicating that the relationship between Difficulty of subject, Knowledge and skills required and Academic application is strong. To determine the relative importance of students' attitudes toward economic achievement (final examination marks), a multiple regression analysis was composed with the value of economics as a subject; the 'Difficulty of economics as a subject; the knowledge and skills required; the enjoyment of learning economics academic application; the performance of the lecturer; and cooperative and collaborative learning on economic achievement (final examination mark)' as the dependent variable.

In the next table, a regression analysis on the academic performance of students in economics education is presented and analysed.

In Table 6, a regression analysis was performed to predict students' academic performances in economics education and final examination marks. It may be observed from data

Table 6: Regression analysis: Academic performance in economics education (N=128)

Model	Change statistics									
	R	R square	Adjusted R square	SE of the estimate	R square change	F change	df1	df 2	Sig.F change	Durbin Watson
1. Difficulty of Economics as a subject	.962 ^a	.947	.916	9.200	.910	19.886	46	203	.000	
2. Knowledge and skills required	.793 ^b	.768	.630	9.110	.650	16.408	39	200	.000	1.899
Gender	.788 ^c	.777	.675	6.334	.611	17.997	56	341	.000	1.667

a. Predictors: (Constant), Difficulty of Economics as a subject

b. Predictors: (Constant), Knowledge and skills required

c. Dependent Variable: Gender (male and female students) on Final Examination marks

Table 7: Student teachers' attitudes towards economics education: Regression coefficients and collinearity statistics (N=128)

Model	Unstandardised coefficients		Standardised coefficients	Collinearity statistics			
	B	SE		t	Sig.	Tolerance	VIF
Constant	46.561		3.299	14.999			
Difficulty of Economics as a subject	4.671	1.445	0.320	5.133	0.000	1.000	1.000
Knowledge and skills required	6.566	1.001	0.255	9.711	0.000	1.000	1.000
Gender	-6.111	1.688	-0.225	-2.925	0.000	1.000	1.000

a. Predictors: (Constant), Difficulty of Economics as a subject

b. Predictors: (Constant), Difficulty of Economics as a subject, Knowledge and skills required and Gender

presented that in model 1 'Difficulty in economics as a subject ($r=0.910$)' is the *strongest predictor* of academic performance in economics as it explains 91.0% of the variance in the final examination marks. In model 2, 'Knowledge and skills required ($r=0.650$)' added a significant ($\beta = -0.225$, $p < 0.001$) 65% of the variance to the prediction of the final examination marks.

Referring to Table 7, a regression analysis was performed to predict student teachers' attitudes towards economics education. Results included were the adjusted R square ($r=.975$) for the final examination marks of students, ANOVA ($\tilde{n} < 0.001$) and the standardised β coefficient of each factor ((1) $\beta = 0.320$, $\tilde{n} < 0.001$; (2) $\beta = 0.255$, $\tilde{n} < 0.001$ and (3) $\beta = -0.225$, $\tilde{n} < 0.001$) which were analysed. One can observe that relative to one another 'Difficulty of economics as a subject' exerted the greatest influence on the 'Final examination marks' (academic performance). 'Knowledge and skills required' exerted a positive and statistically significant influence on the attitude toward economics achievement. On the other hand, 'Gender' exerted a small, negative but statistically insignificant influence on the level of achievement on the attitude toward economics as a subject. Furthermore, residual plots to ascertain the assumptions of the residuals being normally distributed as the latent variables (factors) and independent of one another were examined. The plots indicate no violation of the regression assumptions. There was no problem of multicollinearity since none of the tolerances is less than 0.10 and none of the variance inflation factors (VIF) was greater than 1.00 as shown in Table 7.

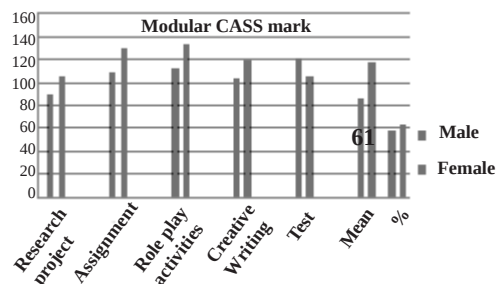


Fig. 1. Modular CASS marks

Comparison between Male and Female Students' CASS Marks and Final Examination Marks

Figure 1 indicated that students completed and participated in five CASS activities. Female

students performed better in four of the five activities. Male students achieved better results in only the class test activity of the module. The female students average CASS activities performance is 64% compared to male students (58%). Results indicated that female students outperformed male students in modular CASS marks.

Based on the results presented in Figure 2, male students do better in the multiple choice questions (61%), economics concepts and calculations (73%) sections of the examination paper. Female students achieved better results in essay type questions (66%) during the same examination. Male students' average final examination score is 72% compared to 58% of female students. The difference in the final examination mark of 14% revealed that male students' achievements is better than those of female students.

Figure 3 indicated that students participated in five CASS activities (50% weight) and final modular examination (50% weight). Female students performed better in the CASS marks section (64%). Male students achieved better results in the final modular examination (72%). Results pertaining to the overall pass rate, male students (68.9%) performed better than female students (60.9%). The results show that male students outperformed female students in the ECT 122 economics education module.

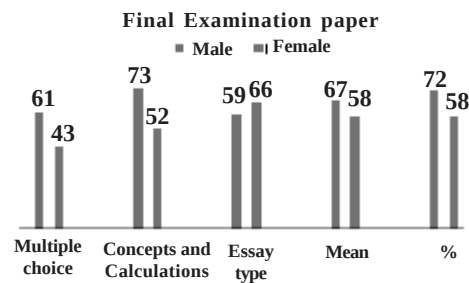


Fig. 2. Final Examination paper scores

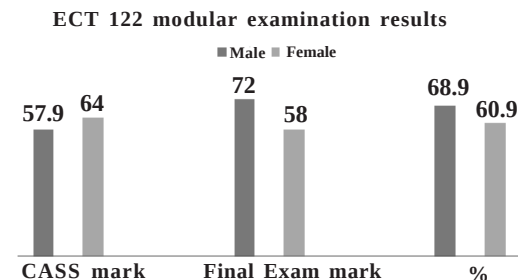


Fig. 3. ECT 122 modular examination results

DISCUSSION

The purpose of this study was to apply factor analysis to the 45-item ATEE instrument in order to obtain insight into the dimensions of attitudes and opinions toward economics education. The statistical analysis of the sampling adequacy of Kaiser-Meyer-Olkin (KMO) model was significant at 0.846. Bartlett's Test Sphericity was also significant at χ^2 ($N=128 = 3126.77$, $df=325$, $p<0.000$) which indicates that the sample and correlation matrix was appropriate for the purpose of this study. Furthermore, the results are encouraging and add to the body of information of other research studies, using an exploratory factory analysis (EFA) (for example, van Wyk 2010a; Ab.Halim et al. 2009; Costello and Osborne 2005; Holfve-Sabel and Gustafsson 2005; Chan 2004; Soper and Walstad 1983).

Secondly, measuring students' attitude to economics education, seven factors were extracted from the rotated factor analysis. The reliability test shows that the internal consistency of the seven factors was excellent (0.885) and acceptable (0.736). The first factor, 'Value (satisfaction) and usefulness', the Factor 4, 'Enjoyment (attraction)', as well as Factor 2, 'Difficulty of the subject matter', represents students' views of the value, enjoyment and difficulty of learning economics education. These are important factors which impacted on the attitude and academic achievements of economics education students. Soper and Walstad's research study (1983), '*On measuring economic attitudes*', describes the importance of a reliable and valid instrument to measure student attitudes or views on economics as subject. A comparative study done by Phipps and Clark (1993) on attitudes toward economics, observed that their factor analyses indicated that males enjoy economics relatively more than females, but were not significantly different from females regarding perceived difficulty or attitude toward the usefulness of the subject. Therefore, findings from this study's ATEE scale are therefore consistent with Ab.Halim et al. (2009) and Yu et al. (2005) reports on the enjoyment of learning economics between male and female students' views. Findings reported from the two studies, indicate three dimensions influenced directly students' attitudes toward economics education – (i) enjoyment of economics as a subject, (ii) usefulness of eco-

nomics, and (iii) difficulty of economics as a subject. The reliability analysis of this present study revealed that Factor 1 ($\alpha = 0.871$) was rated as excellent by the majority of the respondents (78%). Respondents perceived that the value of economics as a subject was very important and as a subject would help them to get a suitable job in the future. According to the results, Factor 2 which was extracted from the rotated factor analysis represents students' perceptions of the 'Difficulty of economics as a subject'. Findings revealed that these students' perceptions were unfounded and which changed during course of conducting the study; that economics was not as difficult as perceived by them. Additionally, the findings of the multiple regression analysis indicated that 'Difficulty of economics as a subject (0.910)' is the strongest predictor of attitude towards academic performance in economics as it explains 91.0% of the variance in the final examination marks. Studies conducted on economics as a compulsory subject, found that more than thirty-eight percent of sampling was concerned with taking economics as a compulsory subject in their first year of study. Male students were found to be less worried than female students because economics is perceived as a difficult subject to pass (Benedict and Hoag 2002; Walstad and Allgood 1999; Chizmar et al. 1985; Walstad 1980). Factor 3 focused on "Knowledge and skills" and Factor 5 indicated the 'Preparation and application of knowledge' in the economics class. These two factors which represent students' perceptions of basic subject content, knowledge and skills is a vital requirement to excelling in economics education. According to the respondents, these factors impacted positively and statistically significantly on their attitude toward economics' achievements. Mogab and Sellers (2004), as well as Oliver (2008) contend that in order to perform well in economics education, it is crucial for students to have cognitive skills (knowledge, comprehension, application and analysis) to demonstrate specific outcomes in the subject. My view is that these skills are important attributes for students to perform well in the subject. In this study, Factor 6 was exacted and labelled as 'Performance of lecturer'. The perceptions of students towards the subject changed because of (i) the availability of the lecturer for consultation, (ii) giving constructive feedback on assessment activities, (iii) conducting lessons in a pro-

fessional manner and (iv) applied relevant teaching and learning strategies to accommodate diverse learning styles. A recent study conducted by Van Wyk (2010b) entitled '*Rethinking the value of simulated games in economics education: An experimental teaching strategy*', reported on student achievements in the subject, which is directly related to the performance of the lecturer. According to respondents of the mentioned study, specific indicators revealed that the lecturer was well prepared for contact sessions, acted in a professional manner, explained economics content clearly and demonstrated effective facilitation skills during lesson presentations. In Goffe's study (2007) '*Redesigning a large macro principles course using Bain's what the best college teachers do*', expresses the importance of what and how teachers perform in their classes to enhance students' performances in their subjects. Moreover, Cebula and Toma (2002) and Walstad (1984) report in similar studies on the effect of classroom games on student learning and instructor evaluation. The findings report that the effect of classroom gaming exercises raises instructor evaluation and enhances student learning outcomes. These factors had a positive impact on student motivation and performance in the subject. The last factor 'Cooperative and collaborative learning' shows students working together to achieve specific outcomes. This is the most important factor extracted from the data which affected most students about how they think towards economics education. From my reflective journal, I observed that students learnt in their respective groups from one another. They cared, supported and cooperatively assisted each other when completing group assessment activities. Van Wyk (2010b) conducted a study on the use of simulated games as a teaching strategy in economic education. The findings from the interviews conducted show that students express their satisfaction through cooperation and collaborative learning. Moreover, Zain et al. (2009) used a pre-experimental and post-experimental design for the purpose of conducting their study. The authors examined whether different learning approaches influence students' behaviour. Findings show that with regard to students' attitude toward economics as a subject, communication and social skills are more positive among the cooperative learning approach group compared to the conventional

approach group. Many research studies report on students' attitudes toward economics, in particular, on the establishment of the positive relationships between students' pre-course attitudes and the course grades in economics (Grimes et al. 2010; Breeden and Lephardt 2005; Ingels and O'Brien 1985; Soper and Walstad 1983). In comparison, Kürsat et al. (2008) examine the relationship between mathematics learning styles and mathematics success in students in the Faculty of Economics and Business Administration. Six factors in learning mathematics were extracted. Diligent learning was the most common factor style and the least common factor style was the technology user style.

Thirdly, gender was factorised and a comparison between male and female students' achievements in economics education were analysed. Female students out-performed male students with regard to modular CASS marks. With reference to the final examination results, male students' achievements were significantly higher than female students. Davies et al. (2005) conducted a similar study which supported the results of this study. The authors explored students' views on the role of 'boldness' in explaining gender differences in thinking and attitudes. The findings of their study reveal that on the basis of gender differences, students think differently through the combinations of approaches to learning, teaching styles and the design structure of the curriculum.

CONCLUSION

The aim for designing and applying the ATEE instrument was achieved. This study did obtained insight into the dimensions of attitudes and opinions of students toward economics education. The application of the sampling adequacy of Kaiser-Meyer-Olkin (KMO) model was significant at 0.846. Further, Bartlett's Test Sphericity was also significant at χ^2 ($N=128 = 3126.77$, $df=325$, $p<0.000$) which indicates that the sample and correlation matrix was appropriate for the purpose of conducting this study. The reliability test shows that the internal consistency of the seven factors was excellent (0.885) and acceptable (0.736). The results of this study were confirmed by Soper and Walstad's research study (1983) as well as Phipps and Clark (1993) comparative study. In comparison to

gender, the results revealed that female students outperformed male students with regard to modular CASS marks. With reference to the final examination results, male students' achievements were significantly higher than female students. One must view the findings of the present study cautiously because of limitations such as sample size, time factor, economics subject knowledge, pedagogical content knowledge and other challenges in changing and strengthening students' views of understanding economics education.

RECOMMENDATIONS FOR FURTHER RESEARCH

Further research studies should be undertaken to determine factors that contribute to subject difficulty, such as topics which need a lot of calculation or assignments that require academic and creative writing skills and a general knowledge of national and global economic issues. Other research interests should also be explored on variables (such as learning styles, teaching styles, retention and absenteeism) that may have a direct effect on the performance of students in economics.

One must view the present study cautiously because of *four* limitations. The first limitation concerns the *sample size* which involved a small number of student teachers (N=128) who participated in this study. Because of the restricted range of participants, in future research studies, I hope to include a more diverse and representative sample of students from our faculty. The second limitation is the *time factor*. This study was conducted during only a twelve-week period of 55 minutes per contact session. A longer investigation period would maybe yield different results. The third limitation is *economics subject knowledge and pedagogical knowledge*. This was a serious concern for some students because of limited or lack of knowledge regarding pre-course economics content and different teaching strategies. This was a significant disadvantage to how to learn the subject and how to implement applicable teaching strategies to enhance their praxis. Some perceived economics as a difficult subject.

The last limitation is *challenges* in changing and strengthening students' views of understanding economics education. The limitations

of the study could be converted into opportunities for further research to strengthening economics education. In order to lower failure rates, strategies in making the classes more enjoyable and interesting through some innovative teaching practices should be developed. More attention to cognitive and social skills development in learning economics should be provided to weak students, especially in calculations, communication, data interpretation, presentation and academic writing. Other strategies may include exposing students to the application of economics in the real world such as role-playing activities and simulated economics games (Van Wyk 2010b). The specific objective is to make student teachers aware of the usefulness and value of the subject they are studying. Real-world data, simulated economics games, economic cartoons, economic quizzes and case studies should be integrated into the teaching content.

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