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The Effect of Entry Grades on Academic Performance of University Accounting Students: A case of Undergraduates of Central University College

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Abstract
The performance of students at undergraduate levels has been attributable to several factors, particularly to the university's systems including facilities, structures and quality teaching and students' services system. Not much has been said about the quality of students admitted to the university. The study employs systems theory to analyse the relationship between the quality of students admitted and their performance in the early part of the undergraduate programme using Pearson's correlation and concludes that there is a relationship between Core Mathematics and Accounting at pre-university level and performance of undergraduate Accounting Students' performance. No correlation was however found between pre-university English and their university level performance. The study recommends that, due consideration be given to the existing admission policy criteria regarding emphasis on performance in Core English, particularly for accounting students seeking to pursue accounting programmes, as it may be more harmful than good.
Keywords: Pre University Mathematics, Pre University English, Pre University Accounting, Accounting Students performance, Principles of Financial Accounting, Managerial Cost Accounting, CGPA

1.0 INTRODUCTION

The educational system forms an important factor for developing any economy. In Ghana's educational system, its primary to university level of education is said to operate a 6-3-3/4-4 model. 6 years of primary school, 3 years of Junior High School (JHS),3 or 4 years of Senior High School (SHS) and 4 years of University Bachelor's degree . In 2005, out of an average of about 280,000 who took the BECE exams at the JHS level, only 70,000 students got admission to 500 secondary schools. These numbers have been increasing annually. Quite more recently, the mode of placement to SHS had changed from being handled by Headmasters which was more decentralised to a computerised system of placement handled centrally. In 2007, using the computerised system of placement, an average of 48% gained admission to SHS out of about 170,000 candidates. In 2012, SHS churned out 174,000students as a result of the two systems of 3years and 4 years of education that was running concurrently and had their products completing school at the same time.

In 1991 when a government white paper on reforms to the Tertiary Education System was published, the establishment of a Board of Accreditation was one of the several proposals made. To ensure the furtherance of effective management of tertiary education, the Board of Accreditation was to serve as the quality assurance body at the tertiary education level. As a result, the National Accreditation Board (NAB) was birthed as the regulatory agency of the Ministry of Education to ensure that Ghana's tertiary education system continues to be of high quality to the fast changing world, and its graduates be progressively competitive in the world of work. The Board has since facilitated the establishment of both public and private institutions, ensuring that standards are set and maintained, and has accredited several institutions offering a variety of quality academic programmes. The liberalisation of the tertiary educational system has seen several private universities emerge as a strong commodity, with some other forms of non-university institutions upgrading themselves to university status. This has seen the number of degree offering institutions increase from barely 3 to over 40 in less than 20 years, drawing the NAB into intense action to ensure that the quality of education in the country is not diluted.

On the average, four year accounting programmes at the universities offer about 16 credit hours per semester and all together about 64 cumulative credit hours by the end of the 2nd year. Of these, about 15 credit hours are computational courses and the rest reading (non-numerate) courses as is usually put. In other words, about 25% of the courses read by accounting students up to level 200 in the university are computational.

Pre-university qualifications required for admission to a degree programme have been defined by the National Accreditation Board, with English Language and Mathematics being virtually non-negotiable. Candidates with WASSCE/SSSCE **must** have aggregate 24 or better, with at least credits in Mathematics and English Language, and one of Integrated Science or Social Studies plus three elective subjects, or their equivalent relevant to the chosen programme. Candidates with aggregates higher than 24 are not to be admitted for degree programmes, whatsoever.

In the 2011/12 academic year, some universities had to suffer the harsh consequences of this breach, as they were compelled to withdraw over 2000 students or face closure. The directive followed the findings of the audit team of NAB to these institutions that indicated that these students did not obtain the required credit in English and Mathematics and Integrated Science or Social Studies, but had been granted admission, in some cases conditional admissions for which they were to make good these outstanding requirements, while pursuing the degree.

To overcome the hurdle imposed by the prerequisites regarding WASSCE and SSCE results, many have had to resort to Diploma in Business Studies (DBS), and matured entrance examinations as alternate ways of gaining entrance into the universities. In other jurisdictions, other entry requirements such as certain score levels in SAT and other recognised bodies complement the secondary qualifications. There is no doubt that there is a relationship between universities admissions and pre-university background. Practices that affirmed this relationship is traceable to England, and believed to have originated in the early 20th century from the universities of Oxford and Cambridge and later translated to the leading universities of Harvard and Yale in the United States, and had since prevailed worldwide.

Back in the mid-20th century as Garrett, 1949 re-evaluates and reconsiders admission criteria in the light of breadth and variety to meet the needs of increasing enrolments and wider range of abilities and interest dates, he recognised the difficulty in breaking the tradition/original concept of a college or university. The tradition saw universities as being exclusive institutions in which highly selected individuals were to receive concentrated training in a narrow curriculum. He asserts that, this concept stubbornly prevailed in spite of mounting evidence that some college entrance requirements were invalid in their attempt to predict college success, thus unfair to many worthy young people.

1.1 Hypotheses: The study thrives on the three hypotheses A, B and C as below:

Hypothesis A: Pre University Mathematics (or Core Mathematics) performance has effect on performance of students on Accounting Programmes in the university

Hypothesis B: Pre University English (or Core English) performance has effect on performance of students on the Accounting Programme

Hypothesis C: Pre University Accounting performance has effect on Accounting programme students' performance

1.2 Significance:

Knowledge of determinants that influence such performances would inform policy directions when determining courses and course contents that influence firm foundation for students that apply for the accounting programme. It also would improve on the calibre of accounting personnel nationwide as potentially good students that would not have hitherto qualified for admission and as a result changed course of pursuit in life would be brought on stream during admission processes, as a result of a second look at university admission policy.

2.0 LITERATURE

2.1 THEORETICAL LITERATURE

2.1.1 Assessment Theory:

Shirlee, (2011) gives two Assessment theories. The first which she calls accountability indicates that assessment are intended to provide metrics that enable valid comparison, and in educational systems standardized exams of basic skills are used to allow comparison across schools. Grading systems are employed by educational institutions with the approval of NAB to assess performance of candidates by subjects and these translated into cumulative or aggregated assessment of all these together to aid comparison. The second assessment theory she calls continual improvement posits that assessments allow formal tracking of results of innovations, to quickly and easily isolate components of the most effective education practices, so they can be shared more widely (Shirlee, 2011). In other words, when innovative systems are introduced, records of students' performances are kept and tracked to determine the elements within the innovation that are contributory to responsive patterns or correlated effects. Even as it may apply to academic life, previous performances may be assessed to determine elements that are contributory to continuous performance on educational and career paths, and isolated to assure continuous improvement.

2.1.2 Selection Theory:

The universal Selection theory conjectures that all knowledge and knowledge growth are due to a process of cumulative blind variation and selection (Cziko, 1995). In other words, knowledge and knowledge growth is achieved through an aggregate of conscious and unconscious historical activities and choices. In context, students' selection of programmes and university selection criteria give regard to varied factors including previous subject knowledge as these are perceived to be contingent to future knowledge growth and performance.

2.1.3 Expectancy Theory:

Instrumentality and Expectancy theory (Vroom, 1964), two of three perceptions of Vroom's Expectancy theory that influence individual's motivation are found useful in this work. The instrumentality aspect of the theory posits that an outcome can be perceived as having value in itself or because of its instrumentality in achieving other valued ends. The outcome may be an end in itself or a means to a higher end. In other words, students' performance at the pre-university must have been persuaded by their desire to do so well in those pre-university exams or their desire to pursue certain programmes in the university. The instrumentality conviction as corroborated by Porter and Lawler indicates that, first level outcomes lead to second level outcomes (Porter & Lawler, 1968). For the study, the pre-university performance in various subjects or outcomes may be perceived as a being the foundation that may be instrumental in impacting on academic performance in the university. Students eager to pursue Accountancy programmes and perhaps also do well in the programme may be urged more to perform in pre-university accountancy courses. The second perception "Expectancy" of Vroom's Expectancy theory defines expectancy as "a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome" (Vroom, 1964). In context, it is expected students with certain performance levels at pre-university levels are likely to performance in a particular way at the university, consistent with earlier performance, as backed by admission criteria.

2.1.4 Learning Theories:

Constructivism theory, one of the learning theories is about knowledge and learning that sees learning as a process in which the learner actively constructs or builds new ideas or concepts from their current and past experiences. In other words, it links new knowledge to prior knowledge and incorporates the new experience into an already existing framework without necessarily changing that framework (Drummond, 2009). In other words, students who did accounting at pre-university would build on that previous knowledge and current knowledge they acquire in the course of their academic progression. Also university students doing undergraduate Business Mathematics would build up on Core mathematics and Accounting at the pre-university level.

2.1.5 Cognitive Theory:

In a culturally based education study, Demmert and Towner, (2003) indicated that, Cognitive theory requires introduction of new knowledge to be done through association with prior knowledge. In other words, for learning to occur, relevant prior knowledge in a person's long term memory must be stimulated or utilized, while the new information undergoes some form of processing that focuses on conceptual characteristics of new information (such as meaning, personal and social relevance, and relationships to prior knowledge and experience) as a means of improving learning and recall (Demmert & Towner, 2003).

2.1.5 Cognitive Style:

Cognitive style is explained as a high-order heuristic that individuals employ when they approach, frame, and solve problems (Brigham, DeCastro, & Shepherd, 2007). In creating measurement indications Allinson and Hayes employ Cognitive Style Index (CSI) which places Intuition and Analysis at the two extreme ends of the measurement scale, Intuition being the characteristic of the right-brain orientation, with judgement based on feelings, whilst Analysis is characteristic of left-brain orientation with judgement based on mental reasoning and focus on detail (Allinson and Hayes, 1996; Coffield, Moseley et al. 2004; Coffield) in (Drummond, 2009). A strong relationship has been established between analytical component of the cognitive style and numerate and science courses (Norvel, 1977). In a theoretical model that assumed a direct effect between aptitude and cognitive achievement concluded that high aptitude students in mathematics have higher scores on achievement than low aptitude students (Brekelmans, Van Den Eeden, Terwel, & Wubbels, 1997). The study streams this observation to assume that, pre-university students with better grades in Core Mathematics are more analytical in cognitive style. Thus, the better the grade, the more analytical the student is.

2.1.7 The Triarchic Theory of Intellectual Abilities

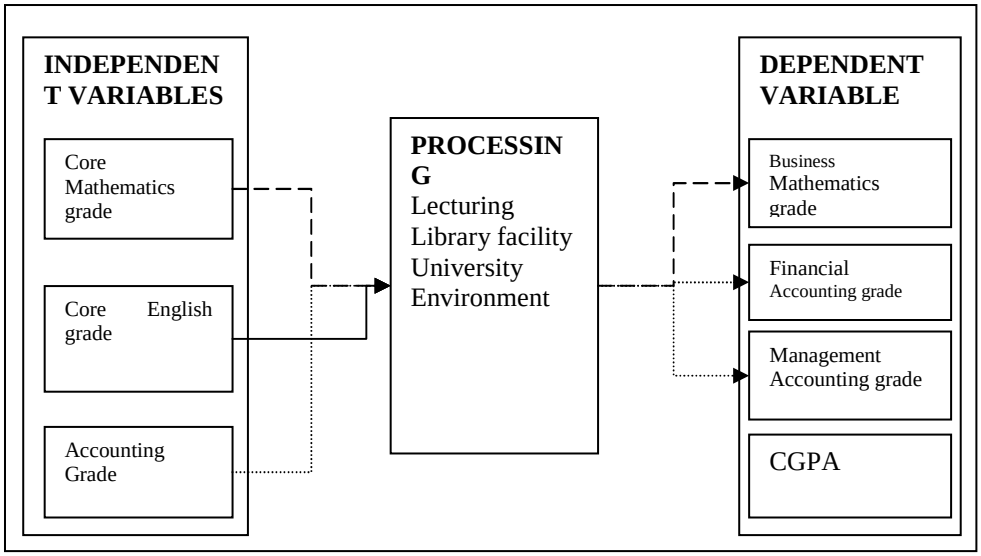
Sternberg's (1985) Theory of Intellectual Abilities recognises three kinds of intellectual abilities namely analytical, creative and practical abilities (Sternberg, 1985; 1986). In measuring abilities, focus is given to analytical abilities, even as all three are recognises as being of equal importance.

2.2 CONCEPTUAL FRAMEWORK

In establishing the effect of pre-university grades on undergraduate performance of accounting students, the study employs Ludwig Von Bertalanffy's (1956) Input-Output models in systems theory as the basis of its theoretical framework as it believes that the quality of input influences the quality of output (Kyoshaba, 2005) . As systems theory has become a convenient model used to support studies in cognitive development and human perception and renders the complex human dynamics comprehensible, it comes handy for this study.

Common Business Background

Assessment Theory: Standardised system of assessment by WAEC & University approve by



Selection Theory: Business student with Core Maths, Accounting & English had foundational

Expectancy Theory: Pre-university passes were stimulated by desire for undergraduate business programme **Figure 1:**

The pre-university performance in figure 1 above is represented by the grades of students in the three courses of Pre University Mathematics, English and Accounting which are used as the independent variables. The dependent variables are the undergraduate grades in Business Mathematics, Financial Accounting, Management Accounting and the Cumulative Grade Point Average (CGPA) which is used to represent the performance of the undergraduate accounting students. It is believed that the conversion factor are the university facility, environment and lecturing styles and quality which are equally available to the students once admitted to the undergraduate Accounting programme.

2.3 EMPERICAL LITERATURE

Some people are able to "bounce back" from negative events quite effectively, whereas others are caught in a web entangled in their negative streaks. Being able to move on despite influences of stressors demonstrates resilience. Ahangar (2010) referred to psychological resilience as effective coping and adaptation although faced with loss, hardship, or adversity. Lazarus (1993) cited in Ahangar, (2010) as having likened psychological resilience to the metaphor of elasticity in metals. He explains that, cast iron is hard, brittle and breaks easily (not resilient), whereas wrought iron is soft, malleable, and bends without breaking (resilient).

Individuals behave differently in similar situations and evaluate conditions differently based on their unique expectations, values, previous experiences and temperament (DeNeve and Copper 1998, cited in Ahangar (2010)). In his findings, Ahangar concludes that 62% of students have good resilience while about 38% of students need assistance in building up their resilience ability. He also added that, such students need to maintain performance and stamina during periods of high demand and should think clearly and logically under pressure. Students' thinking, intuitiveness and systematic nature was highly positively impactful on their resilience.

In the abstract of a study conducted using high-school grades in accounting, mathematics and economics to establish whether these were determinants of students performance in University of Malaya's introductory accounting course, it was concluded that they are important predictors of performance (Tho, 1994). In yet another study that sought to determine the advantage that high school accounting give students entering tertiary business courses, results indicated that students entering tertiary courses with similar academic ability had between one and two grades higher than that of students who did not study accounting at high schoo (Rohde & Kavanagh, 1996)l.

In a cited work by Crouse and Trusheim, (1988), High school information has consistently been identified as the best predictor of academic progress in college, and the additional value of SAT has been questioned even as Bridgeman et al., 2000 indicated some correlation of first-year GPA with SAT and High School GPA for the

various subjects of verbal, maths; and total scores of SAT and (first year) FY GPA for African, American, Asian, Hispanic/Latino and white students. In same work, Bridgeman et al, 2000 was also cited to have indicated that SAT can be useful in addition to high school record. Kirk and Spector (2006) however concluded that maths achievements, student age, gender, the length of time between taking principles and cost accounting are insignificant.

In another study that looked at the determinants of students' performance in an undergraduate accountancy degree programme in Singapore , revealed that students with better prior academic achievement, admission interview performance, critical thinking skills and mathematical aptitude performed better over the entire undergraduate programme. Using spearman's rho, there was a positive correlation of .226 between mathematics and the undergraduate GPA. The results actually corroborated the findings of prior studies by Gul and Fong, 1993; and Koh and Koh, 1999 that indicated that undergraduate accountancy programme requires strong quantitative and numeracy skills. A similar study that investigated factors associated with student performance in accounting course revealed that, High School grade point average, prior knowledge of accounting, grade point average, attendance, and maths grade were all found to be significantly related to students' performance in financial accounting course (D'Souza, 2010). Their work further cited Doran, Bouillon and Smith (1991); Yee Lee (1999); Gencturk (2007); and Al-Twaijry (2010) as having found a positive correlation between prior knowledge of accounting or bookkeeping course and general performance of accounting students in universities and certain specific accounting courses such as financial accounting, Accounting I and Accounting II, management accounting among others.

In a study conducted in New Zealand by Engler(2010) on whether particular school subjects were associated with better performances at the university, it emerged that how well a student achieves in a school subject (i.e. pre-university) is strongly associated with university performance, and that, some subjects were marginally associated with higher university performance, but not in all fields of study. In other words, for two students with same level of school achievement, and enrolled in the same field of study, their university performance in most cases will be statistically indistinguishable, with few cases showing slightly better university performance associated with students taking a particular school subject. Different academic achievements of students at schools largely account for the differences in university performance. Further, the study suggested that requirements for achievements in a particular school subject was not necessary, at least for students who have met the university entrance requirement, as good achievement in one subject could offset poorer achievement in another. Engler however prompts that his finding does not mean that skills or knowledge gained in a subject are unimportant. Prerequisite skills or knowledge for various fields of study see students with same background do well. Engler 2010, in an earlier work had indicated that while higher levels of school performance was now a preferred approach for general admissions in universities, this could disadvantage particular groups of below-average students at school, who counter-intuitively, do well at university.

Personal attitudes, motivation and time management skills contribute to the basis of successful learning, whether it occurs in school or at university, and are independent of the subject matter being studied, thus, making the weak association between subject taken at school and university performance not surprising .

Service quality effect on students' performance, a study conducted in Pakistan, concluded that students' satisfaction and motivation increases performance level of students; and, satisfaction and motivation are influenced by dimensions of service quality (Ahmed, et al., September 2010).

3.0 METHODOLOGY:

149 students of Central University College doing BSc Accounting programme were sampled for the study. The sample includes students who joined the university from level 100 in 2007, 2008 and 2009 and entered with WASSCE and SSCE results, 50, 50, 49 students picked for each year respectively. The preference for the WASSCE and SSCE and not other approved or acceptable results was to provide some standardisation for comparison, especially as these have equivalence clearly defined. Most students that entered with other qualifications still had to complement their submissions with WASSCE and SSCE results. Again, the WASSCE and SSCE results are the main stream qualifications for admission.

Pre-university performances were juxtaposed to university performances. Variables used were students' Entry grade for Core English, Core Mathematics, and Accounting to represent pre-university performance. Core English and Core Mathematics were chosen as part of the pre-university qualification factors as they are passes that are not compromised by the National Accreditation Board and also to bring equilibrium/standardization in the basis of assessment as per the Assessment Theory. Pre-University Accounting was also chosen as it happens to serve a basis for students intending to do Accounting at higher levels of studies to establish whether knowledge and knowledge growth is cumulative as Selection theory indicates. University performances considered students' university grades in Principles of Principles of Financial Accounting I, Principles of

Principles of Financial Accounting II, Managerial Cost Accounting I, Managerial Cost Accounting II, and Business Mathematics and their Cumulative Grade Point Average (CGPA) as at level 200. These courses in the Accounting programme were used as they were the accounting related courses up to level 200, and also, as the content of these courses at the undergraduate programme primarily use accounting principles similar to pre-university accounting. Business mathematics was also considered as it relates highly with Core mathematics and basic principles of business studies. Level 200 CGPA was used as it still formed the determinant of the overall foundation performance assessment of students, particularly at the early stages of their university academic life. Courses done in levels 100 and 200 have several non-accounting courses in them and these covers a lot of the reading courses that accounting students do in the university which all feed into the determination of the CGPA. The researchers thought that the early level courses reflect a fair balance of both reading (English bias) and computational (accounting bias) courses than the later levels of the programme (i.e. levels 300 & 400) that were believed to be biased towards programme specialisation. We believed that, early grades in the university are a true reflection of the capacity of students from SHS, with little departure as the time span is little and would not have been significantly influenced by university environment. Thus, earlier performance at SHS should translate into their academic performance at the university, particularly at the wee stages their tertiary life of which little influence from the university environment or system might have occurred as suggested by Ahmed, et al., 2010.

The data from the study was collected from the Admissions Registry of the university. Data on students' grades in Mathematics, English and Accounting courses of Accounting Students were gathered from the admissions files. In other words, students who did not do pre-university accounting were ignored as the study intended establishing a relationship between pre-university accounting and accounting courses in the undergraduate programme. The work translates grades of students into numeric equivalence, both for their pre-university entry grades and the university grades and cumulative grade point average (CGPA). We however recognised that, numeric values assigned in the SHS were the reverse of what was done in the universities. Lower values assigned for better grades in SHS while higher values were assigned to very good grades. E.g. grade A in SHS is 1 but same grade in university is 4.0. To overcome the reverse challenge, the work assigned higher numbers to very good grades and lower numbers to poor grades so as to make it consistent with the numeric systems of the university.

Even though most prior studies by others including those referenced used spearman's rho for the analysis, this work joins the few to use Pearson's correlation approach for the analysis as it believes that, the grades of students were not ranked but are scaled and were more suitable applying likert scaling approach. The study considers the pre-university performances of student against their university performances in Business Maths, Principles of Principles of Financial Accounting I, Principles of Principles of Financial Accounting II, and CGPA.

The study defines the α with the p-value of .05.

The analysis depicts Pre University Mathematics, Pre University English, Pre University Accounting, Business Mathematics, Principles of financial Accounting I, Principles of Financial Accounting II, Managerial Cost Accounting I, Managerial Cost Accounting II, and Cumulative Grade Point Average as PreMaths, PreEng, PreAcct, BusMaths, FinAcc1, FinAcc2, MCA1, MCA2 and CGPA respectively.

4.0 FINDINGS AND ANALYSIS:

Reference to the appendix, hypothesis A which states that, Pre University Mathematics performance has effect on performance of students on Accounting Programmes in the university was accepted at 5% statistical significance, as results were of statistical significance, except for Principles of Financial Accounting II. There was however a weak correlation between Pre University Mathematics and the accounting inclined early courses of the early Accounting Programme, thus Business Mathematics, Principles of Financial Accounting I, Managerial Cost Accounting I and Managerial Cost Accounting II. There was a relatively stronger positive correlation between Pre University Mathematics and the Cumulative Grade Point Average (CGPA) of the accounting students at level 200 as it showed a rather moderate positive correlation. This is indicative that, apart from Pre University Mathematics positively correlating with Accounting Courses in the early part of the Accounting programme, it appears to make a rather greater impact on the non-accounting courses in the Accounting programme that were not captured in this study.

Hypothesis B, which states that, Pre University English performance has effect on performance of students on the Accounting Programme was rejected as this did not reflect statistical significance, except for Managerial Cost Accounting I which actually showed a weak positive correlation. That is to say Pre University English is probably not a good indicator of assessing performance of Pre University Accounting students for admission to university Accounting programmes.

In hypothesis C that indicates that, Pre University Accounting performance has effect on Accounting programme students was predominantly accepted, except for Principles of Financial Accounting II which was rejected as that did not show statistical significance. Performance in the Pre University Accounting consistently showed a rather weak positive correlation for the university accounting related courses which ultimately reflected about same positive correlation on the CGPA. In other words, performance of pre university students' accounting grade reflects the potential performance of the students somehow.

5.0 CONCLUSION AND RECOMMENDATION

Earlier studies reveal some correlation between pre-university school performance and performance at the university. Results of the study happens to confirm this assertion particularly with regard to Pre University Mathematics (or Core Mathematics) and Pre-university Accounting grades as they were found to be statistically significant in determining performances of accounting students in the university. This findings corroborates the Selection Theory, Expectancy Theory (both Instrumentality and Expectancy perceptions), and Constructivism theory. Consistently, English Language was not found to be statistically significant to students' performance at the university. This findings actually included courses within the programmes that were more numerate and those that were reading and would require greater use of English Language. The statistical insignificance of English Language on the university performance of accounting students possibly explains the extent to which quality of English plays in assessing accounting students in the university. Instead, it may thus be the case that, the substance or import of answers to questions is sought by assessors at the university, without recourse to strictness on English language. What was more interesting about the observation was that, there were more reading courses at the levels 100 and 200 than calculation courses, which in other words would have expected to see English Language make some impact.

This goes to confirm Engler's (2010) position that some pre-university subjects are marginally associated with university performances. In the case of defining admission criteria by policy makers for accounting students, more emphasis may be placed on Pre University Mathematics (or Core Mathematics) and Accounting with little or relatively high discretion employed at emphasis put on English Language as it has little influence on their performance in the accounting programme in the university. In other words, the criteria of both English and Maths being a prerequisite may be counter helpful for potentially good university accounting students as many of such students who may have performed poorly in English but had the potential to perform at the university would be denied entry. Following the observation that about 75% of courses read up to level 200 are non-numerate course (i.e. English inclined), the findings again could be indicative that, universities have the capacity to transform or neutralise candidates' deficiency in English, causing them to handle other courses in the accounting programme that may require the extensive application of English without affecting their performance.

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APPENDIX

	PreMath	PreEng	PreAcct	BusMaths	FinAcc1	FinAcc2	MCA1
PreMath	1.0000						
PreEng	0.2919	1.0000					
	0.0490						
PreAcct	0.1716	0.1515	1.0000				
	0.2543	0.3148					
BusMaths	0.3253	-0.0592	0.3337	1.0000			
	0.0274	0.6960	0.0234				
FinAcc1	0.2923	-0.0985	0.3342	0.5756	1.0000		
	0.0487	0.5148	0.0232	0.0000			
FinAcc2	0.1632	-0.2108	0.0802	0.4759	0.4434	1.0000	
	0.2785	0.1597	0.5963	0.0008	0.0020		
MCA1	0.3030	0.2931	0.5238	0.2774	0.2412	0.1379	1.0000
	0.0407	0.0481	0.0002	0.0619	0.1063	0.3609	
MCA2	0.3360	0.0226	0.3128	0.2847	0.5897	0.3975	0.5301
	0.0225	0.8817	0.0343	0.0551	0.0000	0.0062	0.0002
CGPA	0.4933	-0.0079	0.3190	0.6407	0.7120	0.5516	0.5549
	0.0005	0.9582	0.0307	0.0000	0.0000	0.0001	0.0001

	MCA2	CGPA
MCA2	1.0000	
CGPA	0.6181	1.0000
	0.0000	

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