

RESEARCHING THE FIRST YEAR ACCOUNTING PROBLEM: FACTORS INFLUENCING SUCCESS OR FAILURE AT A SOUTH AFRICAN HIGHER EDUCATION INSTITUTION

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ABSTRACT

Under-performance and failure in first year accounting is a problem experienced in many higher education institutions world-wide as well as in South Africa. Literature shows that the problem is relatively well researched. Most of the research has taken place within the quantitative paradigm and in many cases focused on a search for determinants of possible success and/or failure in the subject or the factors contributing to the situation. The findings of all these research projects are varied and often inconclusive. It also becomes clear that the contexts of the studies are diverse, which makes it difficult for institutions and concerned lecturers to apply the findings in their specific situations. In this article the authors provide an overview of some of the most prominent research findings on factors determining or influencing success/failure in the field. They also attempt to organise these findings in a digestible way for the concerned lecturer and interested researcher. This is followed by a report on the first phase of an investigation into possible factors contributing to the low performance levels of students at a South African higher education institution. The unit of analysis is the first year accounting class of the first author (a lecturer at the institution). The research is quantitative in nature and statistical analyses are employed. In addition to factors such as age, gender, matric performance in key subjects, M-scores, class attendance and nationality, the investigation also looked at the levels of learning approach of the students as a possible determinant of success or failure. The findings are compared with the findings from literature and the implications of the research are discussed.

Keywords: first year financial accounting, under-performance, contributing factors, possible solutions.

1. INTRODUCTION

The high failure rate of first-year accounting students at higher education institutions has become an issue of great concern worldwide as well as in South Africa. The situation at the Central University of Technology (CUT), Free State, is no different. The subject Financial Accounting 1 (FA1) has been classified by faculty management as one of the problem subjects in the School of Accounting.

Bad performance in FA1 has consequences for students themselves as well as for the institution. Failure and non-completion leads to low degree

performance and affects personal lives of students. This in turn influences government funding of the institution which has been performance-related since 2004. Low degree achievement causes student congestion and prevents new students from enrolment. Higher institutions are under pressure to decrease the failure rate and increase the throughput rate (CHE, 2000:17). The School of Accounting at the CUT can also not claim excellence if so many students are failing. The majority of these students are from previously disadvantaged backgrounds where families are making huge personal and financial sacrifices to give their children the opportunity to study. The failure to achieve academically amounts to the failure of utilising human capital at all levels.

In categorising higher education research Malcolm Tight classifies issues of success and non-completion under the category of “The Student Experience” (Tight, 2003:7). His overview of studies that have researched success and non-completion focuses on studies in both quantitative and qualitative paradigms and looks at “both academic and non-academic (psychosocial, cognitive, demographic)” predictors of academic success (Tight, 2003:95).

It was from this premise that the literature study regarding the factors that underlie the first year accounting problem at the CUT was undertaken. Subsequently it was noted that when researching the student experience in South Africa as developing country, the classification of research concerning the student experience should include the non-academic category culture and ethnicity, which forms a distinct category of factors determining success or non-completion.

Culture and ethnicity are two of the most important factors which delineate South Africa as a developing country and have bearing on historically disadvantaged schooling and educational opportunities of black students.

A significant number of studies were scrutinised to identify the factors that determine the success or failure of students in academic achievement as well as success and failure in first year accounting in particular. A literature search yielded studies pertaining to achievement in general and to accounting specifically. These studies focused on the following factors as determinants of success: Previous academic performance, the relationship between accounting and performance in certain school subjects, student motivation; student learning approaches, students' proficiency in language of instruction, gender; age; ethnicity and nationality as well as student support.

These studies were mostly of a quantitative nature, statistically examining relationships between abovementioned variables and academic performance in general and performance in accounting specifically. Many of the studies, however, have presented a variety of conflicting and contradictory findings and conclusions concerning the same issues, thus providing little guidance as to what the determinants of success or failure in first year accounting actually are and how these issues can be addressed.

It should be noted that the researchers worked from the premise that research findings concerning the factors that influence academic success in general would also influence success in accounting in particular since it is assumed that there is a possibility that performance in general and performance in accounting are related. This presumed relationship has an important bearing on the issue of admission requirements of students to courses in accounting. It is of particular importance to note that the new examination system which will be instituted for Grade 12 learners in 2008 necessitates that institutions in South Africa consider new admission requirements for higher education institutions. Determining factors that may be implemented as guidelines in this regard may certainly be invaluable.

In an attempt to contribute to research concerning the first-year accounting problem and the debate regarding admission, in particular within the South African context, the purpose of the article is threefold:

- To present an overview and categorisation of some of the multiple and diverse research findings on factors influencing the success or failure of students in general and first year accounting students in particular.
- To report the findings of an investigation into possible determinants of first year accounting success or failure at the CUT.
- To discuss the implications of this research for first year accounting in general and for the CUT in particular.

The discussion commences with an overview of key research findings on factors affecting academic performance in general and/or accounting in particular. It is followed by information on the situation at the CUT, the nature of the investigation undertaken, the key findings and the implications of the findings for the CUT.

2. FACTORS AFFECTING ACADEMIC PERFORMANCE IN GENERAL AND ACCOUNTING IN PARTICULAR

2.1 Previous performance

A reasonable number of studies have identified previous performance of students, their university entry scores and academic ability (aptitude) as the major predictors of future academic performance (Doran & Golen, 1998; Dickson, Fleet & Watt, 2000; Ting, 2000; Khan & Nauta, 2001; McKenzie & Schweitzer, 2001; Ewer, Greer, Bridges & Lewis, 2002; Johnson, 2005 and Levy & Murray, 2005). Studies that related previous performance to accounting in particular were undertaken by Eskew and Faley (1988); Tyson (1989); Marcheggiani, Davis and Sander (1999); Drennan and Rohde (2002); Negash (2002); Dowling, Godfrey and Gyles (2003) and Duff (2004).

Some of the arguments offered for this phenomenon are that students who have previously performed better are more intelligent than their counterparts

(Eiselen & Geysler, 2003:118-128) and that students do well when, based on previous performance, they expect to do well (Watson, McSorley, Foxcroft & Watson, 2004:200).

Contrary to the above conclusions regarding previous performance as a predictor of later performance is the opinion of Levy and Murray (2005) who state that students who do not meet the tertiary entry requirements will perform adequately if provided with supportive transitional programmes and an emotionally supportive environment. The findings of a research project done by Huysamen (2000:146) is on par with this reasoning and underscores the argument that ethnicity and associated educational disadvantage should be taken into account when researching underachievement in South Africa.

Huysamen found a poor correlation between matriculation performance and first-year university performance for black students at a South African university which he ascribed to poor teaching in historically black high schools and the students' poor command of the language of instruction (English). According to Levy and Murray (2005) tertiary entrance scores determine academic success only when those students who do not meet the entry requirements are presented with an appropriately supportive transitional programme and environment. In such cases their academic performance can be comparable with those of the mainstream student body.

2.2 Performance in certain school subjects

School subjects which have been identified as having an influence on the performance of students in first-year accounting are performance in Grade 12 mathematics and Grade 12 accounting, but the findings are contradictory and inconclusive. According to Dempsey and Stegmann (2001:19) great emphasis is being placed on Grade 12 mathematics for entry to a B Com Accounting degree. Mathematics proficiency is regarded by certain academics as a basis to assess numerical skills and analytical ability which are prerequisites for performance in accounting. Some studies found a positive association between first-year university performance in accounting and Grade 12 mathematics (Gul & Fong, 1993; Tho, 1994; Collier & McGowan in Negash, 2002). A study by Negash (2002:7), however, found that proficiency in Grade 12 mathematics is not a significant variable in explaining grades scored in Financial Accounting 1 at a South African university. This finding was confirmed by Naser and Peel (1998:221) whose research results indicated that school mathematics grades did not impact significantly on performance in first year accounting but students who had completed a more advanced university mathematics course, performed in accounting at significantly higher levels.

Evaluating the relevance of performance in accounting as a school subject to performance in accounting at tertiary level, several studies have confirmed a positive relationship between the two (Eskew & Faley, 1988; Keef, 1992;

Naser & Peel, 1998; Drennan & Rohde, 2002; Halabi, Juhani & Farley, 2005 and Koch & Kriel, 2005). On the other hand, Rankin, Silvester, Vallely and Wyatt (2003) are of the opinion that high school accounting can only be beneficial to the performance of students in first year university accounting if there is a close association between the high-school and university curricula. In accordance with this belief Eiselen and Geyser (2003:20-121) studied the performance of achievers and at-risk students in first-year accounting at a South African university. In this specific study, achievers are described as first year students who achieved an average of 75% or more at the end of the first semester and at-risk students are those students who achieved an average of 40% to 47%. They found no statistically significant differences between achievers and at-risk students in terms of the subjects taken at school (based on chi-square tests). Most of the students studied (at-risk students and achievers) had taken accounting at school. This view is supported by Kruck and Lending (2003). These findings contradict the view that previous accounting experience is a predictor of future performance.

Therefore the evidence that prior knowledge of accounting determines performance in elementary accounting such as offered on first year basis at university is negated. According to Du Plessis, Muller, and Prinsloo, (2005: 687) the impact of prior knowledge of accounting in elementary accounting has been widely researched, but no consensus exists on its influence or otherwise on academic performance.

2.3 Motivation

Motivation/effort has been found to be positively associated with academic performance. Research has shown that measures of motivation/effort can explain significant portions of the variance in overall academic performance, above that explained by grades and aptitude scores and that ability plus effort leads to higher levels of performance (Eskew & Faley, 1988:138; Adler, Milne & Stablein, 2001:26; Yip & Chung, 2005:66). A study by Gracia and Jenkins (2003:27) revealed that students who actively demonstrate commitment and self-responsibility towards their studies tend to do well in assessments. Such an attitude of commitment and self-responsibility is indicated by regular and consistent patterns of attendance, completion of set work outside the classroom, as well as high levels of preparedness and readiness when attending class.

Accounting tends to be taught in a progressive way, with each week's lectures providing a foundation for the next. According to the National Teaching Fellowship Project (2003:7) poor attendance contributes to study difficulties, because missed classes lead to problems in catching up, which in turn can lead to the lack of motivation of students. Paisy and Paisy (2004:51) found a clearly positive relationship between class attendance and subsequent academic performance. The research results of Halabi et al. (2005:27) however indicated that the cognitive load (effort) of students with prior

accounting knowledge was significantly lower than those with no accounting knowledge.

2.4 Learning approaches

A learning approach describes the way in which a student relates to a learning task (Byrne, Flood & Willis, 2002:28). The two identified approaches are called deep and surface learning. Students applying a deep approach to their learning or way of study aim to achieve a high level of understanding, questioning arguments, and relating new knowledge to previously acquired knowledge and personal experience. A surface approach is associated with a low level of understanding and the primary aim of studying is to memorise facts in an unrelated manner so as to pass examinations (Biggs, 1999 as quoted by Biggs, Kember & Leung, 2001:123) According to Ames and Archer in Watson et al. (2004:194) motivational factors were identified as critical to the choice and application of learning approaches by students. Yip and Chung (2005:68) found that learning approaches are good determinants of academic success. Elias (2005:1-5) examined the way in which students approach the studying of introductory accounting courses. The results of the study indicated that the students use more deep approaches and fewer surface approaches, which in the authors' opinion, could be because examinations and other assessment methods in accounting usually require a deep understanding of the subject matter rather than the memorisation of key concepts or facts. According to the findings of abovementioned studies, the grade point average and the expected course grades of the students correlated positively with the use of a deep approach to studying. The same study by Elias however, revealed that students who learn accounting before taking the introductory courses in higher education institutions use more surface strategies compared to those first exposed to accounting at such institutions. A possible reason identified by the author is that for those who have already studied accounting, the material is redundant - hence they feel that they need only to memorise key concepts to pass the exams.

According to Biggs et al. (2001:138) teaching and assessment methods often encourage a surface approach when they are not aligned to the aims of teaching the subject. According to these authors the presence of a surface approach signals that something is wrong in the teaching and assessment methods, and that when this approach subsists, it tells us something about the quality of the teaching environment.

2.5 English language (as medium of instruction)

In South Africa the majority of black students receive instruction in English, which is in most cases their second or even third language. Koch and Kriel (2005:223-227) analysed the language needs of students at a South African university in an attempt to establish the extent to which the high failure rate in first-year accounting is attributable to language problems. Concurrently, they

studied how language problems relate to poor performance. The group interviews and case studies employed in the study revealed that the achievement problems could not be attributed directly to poor proficiency in English and appeared to be the result of ineffective reading skills and strategies, a lack of knowledge, or an inability to apply knowledge in order to solve a problem. The lack of problem-solving ability was regarded as the result of poor reading strategies (such as not reading all instructions) or reading ability and a lack of knowledge. Rakgokong (in Setati, 2002:13) argues that using only English as language of instruction for learners whose first language is not English has a negative effect on the learners' meaning making and problem solving. In order to determine the influence of the language of instruction on the performance of accounting students, Du Plessis et al. (2005: 693-696) used the Grade 12 English examination marks of students as an indicator of English proficiency. Although language was identified as a predictor in the study, a clear-cut picture regarding the effect of English as medium of instruction did not present itself in the findings. This was confirmed by Naser and Peel (1998:221), whose study revealed that school English did not impact significantly on student performance in a first level accounting course.

Eiselen and Geyser (2003:122-128) measured the vocabulary and comprehension of the at-risk students and achievers by means of a psychometric test and found a significant difference between the two groups on both dimensions. In this study focus group interviews also revealed that some students (mainly at-risk students) are unable to verbalise their thoughts coherently and do not have the skills in English to communicate effectively. Drennan and Rohde (2002) investigated the performance of students in management accounting at an Australian university. They found that having English as the first or subsequent language has no differential impact on introductory-level performance, but at advanced level, students whose first language is English, outperform the others because of the ability to apply concepts to situations. Rankin et al. (2003:382) confirmed this result. The literature findings concerning the relationship between English as medium of instruction and academic performance in first year accounting are thus inconclusive.

2.6 Gender

The research findings on the influence of gender on academic performance in accounting and in general have also been contradictory and inconclusive. A number of studies found that males perform better (Doran, Bouillon & Smith, 1991; Du Plessis et al., 2005), whilst others found that females perform better (Tyson, 1989; Cantwell, Archer & Bourke, 2001; Gammie, Paver, Gammie & Duncan, 2003; Gracia & Jenkins, 2003; Smith, 2004). Lipe (1989:147) found that male students perform better than females in male-instructed classes and vice versa. Many studies have, however, found no gender difference in the performance of students in accounting and in general (Campbell & Campbell,

1997; Naser & Peel, 1998; Marcheggiani et al., 1999; Negash, 2002; Dowling et al., 2003; Rankin et al., 2003).

2.7 Age

Studies have also produced inconsistent results when measuring the relationship between age and general academic achievement. Some studies showed no relationship between age and performance (Naser & Peel, 1998; Dickson et al., 2000; McKenzie & Schweitzer, 2001; Negash, 2002; Eiselen & Geysler, 2003; Duff, 2004; Johnson, 2005). A number of studies found that mature students perform better than younger students (Cantwell et al., 2001; Wilding & Andrews, 2006), while some studies found that younger students perform better than older students (Dowling et al., 2003; Du Plessis et al., 2005;).

2.8 Ethnicity and nationality

Ethnicity and nationality studies have established that ethnicity and nationality influence both academic performance and accounting performance in South Africa. A study by Negash (2002:1-8) revealed that white students score significantly higher grades than their black counterparts in accounting despite the provision of identical lectures, tutorials and learning materials. Huysamen (2000) confirmed this result in his study. He found that the average first-year performance of black students compares unfavourably with that of their white counterparts. The results of the study, however, indicated that the Grade 12 pupils from the previously disadvantaged high schools are increasingly succeeding in narrowing the gap between their performance and that of students from educationally non-disadvantaged high schools. Rankin et al. (2003:365) also investigated the impact of student diversity on performance in first-year accounting. Interestingly, the results of this study indicated that on average international students studying on campus perform better than domestic students studying either on or off campus.

2.9 Support

A positive relationship has been identified by researchers such as Campbell and Campbell (1997:730-738) and Packham and Miller (2000:55-63) between support for the students in the form of peer-assisted student support (supplemental instruction) or mentoring and academic performance. According to Levy and Murray (2005) a supportive transitional programme and environment can increase the performance of students.

2.10 Summary of findings

The literature review presented in this section indicates that the findings on several of the factors investigated are inconclusive and contradictory and have failed to produce significant results. In Table 1 a summary of these findings is presented.

Table 1: Influence of selected factors on academic performance and first year accounting performance

Factor	Relationship to performance
Previous academic performance	Inconclusive
Performance in school subjects:	
Accounting	Inconclusive
Mathematics	Inconclusive
Motivation	Positively related
Learning approaches	Positively related
Language medium	Inconclusive
Gender	Inconclusive
Age	Inconclusive
Ethnicity and nationality	Positively related
Support for students	Positively related

The findings of the literature review provided the impetus for an empirical investigation at CUT into possible factors that influence performance in Financial Accounting I (FA1) at this institution. It also served as basis for comparing the results with those of previous investigations.

3. BACKGROUND TO THE INVESTIGATION AT CUT

The poor performance in FA1 has been of great concern to faculty management and the lecturers involved. Certain actions were taken by the faculty management at CUT in an effort to improve the performance of the students, such as changing FA1 to a semester subject, raising the admission requirements and implementing support programmes for the students by means of Supplemental Instruction (SI) a support programme facilitated by senior students during lunch times. Despite all the measures the pass rate for FA1 in 2004 remained below 50%. In 2005 the admission requirements were raised again, to 60% for Grade 12 accounting on the standard grade (SG) and 50% on the higher grade (HG). The pass rate increased to just over 50%.

It was evident that the actions taken by the institution led to an improvement, but a large percentage of the students still failed the subject. There was no doubt that more factors than those attended to were having an influence on the FA1 results, as substantiated by literature.

The aim of the investigation at the CUT can be described as an effort to address the concerns regarding the continuation of unsatisfactory performance among FA1 students. It was firstly important to determine whether the current admission requirements as related to overall performance in Grade 12 (M-scores) and performance in Grade 12 accounting, as well as the implementation of a support programme show any relationship with student performance in FA1. After careful consideration of previous research

findings and the practicalities involved (such as the availability of information and the feasibility of an investigation), it was decided to focus the first phase of the investigation on an extended list of variables and investigate the possible relationship between students' performance in FA1 for the first semester of 2006 (REK11CB) and the following variables:

- Grade 12 performance in accounting, mathematics, first languages, English as subject as well as the overall M-scores.
- Gender
- Age
- Class attendance
- Supplemental Instruction attendance
- Nationality
- Learning approaches

FA1 is one of the core subjects within the programmes National Higher Certificate: Accounting and National Higher Certificate: Financial Information Systems. The target population consisted of all the students registered for these two programmes for the first semester of 2006 at the main campus, and who had written the FA1 (REK11CB) examination in June 2006 (267 black and 3 white). In employing convenience sampling, all the students registered for the National Higher Certificate: Financial Information Systems (71 in total) were selected for the sample.

By chance the students in the sample were all black and were from different language backgrounds, school types, gender and ages. There were 31 males and 40 females between the ages of 18 and 36 in the sample. Of the total number of students (N=71), 52 were South African and 19 were international students, 63 came from public schools and 8 from private schools, 14 were repeating the subject, 11 had completed the foundation programme (CAP) the previous year and six of these were repeating the subject.

Data was firstly obtained from the CUT's management information system. This data included the examination results of the students in FA1 for the first semester of 2006, their overall M-scores in the matriculation examination, their Grade 12 symbols for accounting, mathematics, English and first language, as well as their age, gender and nationality. It should however be noted that a large percentage of the international students were not in possession of matriculation results. Attendance data came from the attendance registers for class and for SI attendance. Students also completed a survey questionnaire in order to obtain additional biographical data.

In the case of learning approaches as variable, the Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) of Biggs et al. (2001) was used. The questionnaire, with well-identified motivation and strategy subscales, assesses deep and surface approaches, and can be used to evaluate the teaching environment. The Biggs questionnaire was administered during a

special contact session arranged during the final examination in November 2006 at the main campus of the CUT. Fifty-three of the 71 students attended the session, which may be regarded as a response rate of 74.6% for this part of the investigation.

The data was statistically analysed. In some cases the Pearson correlation co-efficient and t-tests were computed to make inferences. Throughout the analysis an alpha of 0.05 (5%) was chosen as the level of significance.

4. FINDINGS OF THE INVESTIGATION

The percentage distribution of the scores obtained by the sample of students in FA1 for the first semester of 2006 (REK11CB) is shown in Table 2.

Table 2: Percentage distribution of scores in FA1; semester I, 2006

%	% of students
0-49	52.1
50-59	31
60-74	12.7
75-100	4.2

For FA1 at the CUT, less than 50% is a fail, 50% and more a pass, and 75%-100% a distinction. From the table above it is clear that 52.1% of the students failed the subject in the first semester, while three students (4.2%) obtained distinctions (one of whom was repeating the subject).

In this study the M-scores of the students in the final matriculation examination were used as an indication of their previous academic performance. For the calculation of the M-score of a candidate a scoring scale as presented in Table 3 is applied for all matriculation subjects.

Table 3: Scoring scale for matriculation subjects (M-scores)

	A 80-100	B 70-79	C 60-69	D 50-59	E 40-49	F 34-39	Below 33
Standard grade	6	5	4	3	2	1	0
Higher grade	8	7	6	5	4	3	0

Table 3 makes it clear that more points are earned for symbols obtained on the higher grade than on the standard grade. For simplicity of interpretation, the scores obtained for higher grade and standard grade were treated as one

variable. Marks achieved in various subjects are converted to M-scores and reported as such whether they were obtained on higher or standard grade.

At CUT the admission requirements for FA1 are currently 60% in accounting on standard grade (M-score 4) and 50% on higher grade (M-score 5), as well as a total of 27 points on the scoring scale. Students with less than 27 points had been accepted if there was still place available and/or if they had passed a selection test.

The FA1 students included in the sample had achieved M-scores as indicated in Table 4.

Table 4: M-scores obtained in students' matriculation examination

M-score	Percentage of students	Cumulative %
0-20	16.4	100
21-26	23.6	83.6
27-34	45.5	60
35-48	14.5	14.5

According to Table 4 only 60% of the students had scored 27 points and more and had thus met the admission requirement of 27 points on the CUT scoring scale.

Table 5 presents the M-scores obtained by the students in Grade 12 for accounting, English, first language and mathematics.

Table 5: M-scores, % of students and cumulative % of students in sample for each subject.

M-score	Accounting		English		First language		Mathematics	
		Cumulative %		Cumulative %		Cumulative %		Cumulative %
0	0		0		0		14.8	100
1	7.4	100	0		0		14.8	85.1
2	5.6	92.7	0		0		22.2	70.3
3	5.6	87.1	9.3	100	0		11.1	48.1
4	29.6	81.5	22.2	90.7	6.3	100	22.2	37
5	24.1	51.9	37	68.5	22.9	93.8	7.4	14.8
6	25.9	27.8	24.1	31.5	35.4	70.9	7.4	7.4
7	0	1.9	7.4	7.4	29.2	35.5	0	0
8	1.9	1.9	0	0	6.3	6.3	0	0

From Table 5 it is evident that 81.5% of the students had obtained an M-score of 4 and more for accounting in Grade 12. In English 68.5% of the students obtained an M-score of 5 and more and the balance (31.5%) had an M-score of less than 5. The students also attained an adequate level of proficiency in their first languages since a large percentage of them (70.9%) obtained an M-score of 6 and higher. The Grade 12 mathematics marks are the lowest. Only 22.2% of the students achieved an M-score of 4 and higher.

In Table 6 the correlations between FA1 results for the first semester of 2006 (Table 2) and the subjects in Table 5, the M-scores (Table 4), class attendance, SI attendance and age are presented.

Table 6: Correlation between performance in FA1 and the selected variables

Pearson Correlation	Acc	Math	Eng	First Lang	M-score	Class Attend	SI Attend	Age
Sig. (2-tailed)	.271	.283	.301	.389	.387	.262	.139	-.141
P-value	.048*	.152	.027*	.006*	.004*	.027*	.249	.240
N	54	27	54	48	55	71	71	71

* Significant at .05 level

The information in Table 6 indicates that Grade 12 accounting ($p=.048$), English ($p=.027$), first language ($p=.006$), M-scores ($p=.004$), and class attendance ($p=.027$) were significantly correlated with performance in FA1 at .05 level of significance. However, mathematics ($p=.152$), SI attendance ($p=.249$), and age ($p=.240$) were not significantly correlated with FA1 results.

5. DISCUSSION OF FINDINGS

5.1 Relationship between FA1 and M-scores

Table 6 indicates a significantly positive correlation of 0.387 between the M-score obtained in the matriculation examination and performance in FA1 ($p\text{-value}=0.004 < 0.05$). This finding is congruent with other studies reporting on the association between previous and later performance as discussed earlier.

In this study the M-score was identified as the most significant predictor of performance in FA1, implying that the study confirms the view that students with high university entry scores are likely to continue this high achievement at university. All the students in the study were black and most of them (89%) came from public schools, which might be interpreted as indicating that black students are indeed succeeding in narrowing the gap between their

matriculation performance and their first year university performance (cf. Huysamen, 2000). Conversely, this result may not be indicative of all black students. It could be a purely random occurrence or the consequence of pre-selection which might indicate that the students who chose to study accounting at the CUT were from a group of students with higher than average cognitive ability.

5.2 Relationship between FA1 and Grade 12 accounting

Evidence of a significant positive relationship of 0.271 between performance in matric accounting and FA1 ($p\text{-value}=0.048<0.05$) is provided in Table 6. In the literature no consensus was found on the influence of prior knowledge of accounting on academic performance in first-year accounting courses. Different views were identified in the literature such as that: high school accounting is positively related to performance in first year accounting; high school accounting will only be beneficial if there is a close correspondence between the high school curricula and the university curricula and there is no significant difference in performance between the students in terms of subjects taken at school.

In this study the view that performance in high school accounting is positively related to performance in FA1 is confirmed. Possible reasons could be that there is a close correspondence between the high school and the FA1 curricula at CUT as has been suggested in literature or that high school accounting provides the foundation for FA1.

5.3 Relationship between FA1 and Grade 12 English

According to Table 6, there is a significant positive relationship of 0.301 between performance in matriculation English and performance in FA1 ($p\text{-value}=0.027<0.05$). In the literature reviewed the influence of the English language on the performance of first year accounting students was inconclusive.

Perspectives from the literature concerning English are that: a poor command of the English language is one of the reasons for the poor correlation between matriculation performance and first-year university performance; the Grade 12 English examination mark has been identified as a predictor of performance in accounting, but a clear-cut picture regarding the role of language did not present itself in research findings; English as first or subsequent language seems to have no differential impact on introductory level performance but only on advanced levels.

In this study, performance in Grade 12 English was identified as a significant predictor of performance in FA1. The conclusion might thus be made that the students' command of the English language, which is the main language of instruction at CUT, will have an impact on their performance in FA1. It is also

an accepted fact that proficiency in language relates to proficiency in analytical reasoning and this may be part of the reason for the result. This would also explain the following relationship.

5.4 Relationship between FA1 and Grade 12 first language

In Table 6 it is indicated that there was a significant positive correlation of 0.389 between the students' performance in their first language (other than English) and their performance in FA1 ($p\text{-value}=0.006<0.05$). The medium of instruction at CUT is English, which is not the first language of most of the students. The conclusion can thus be made that if students perform well in their first language, they will most probably perform well in FA1.

5.5 Relationship between FA1 and Grade 12 mathematics

Table 6 indicates that in this study performance in Grade 12 mathematics was not significantly correlated to performance in FA1 ($p\text{-value}=0.152>0.05$). This needs to be elaborated on. The percentage of students who had taken mathematics as a subject in Grade 12 was only 38% ($N=71$). This might indicate that pre-selection as an extraneous variable had influenced the results regarding the association of mathematics and performance in FA1. It could have been a random occurrence or that for some unknown reason these students had not felt confident in their mathematic ability and consequently had not chosen it as a school subject.

According to the literature great emphasis is currently being placed on Grade 12 mathematics for entry to a B. Com Accounting degree due to the lack of a better instrument to assess numerical and analytical ability of the students. Some studies found a positive association between first year performance in accounting and Grade 12 mathematics whilst others found no relationship at all.

For the subject FA1 students should however have some basic numerical skills and analytical ability. This could be the reason why at traditional universities, Grade 12 mathematics is required for entry into an accounting degree.

5.6 Relationship between class attendance of formal lectures and FA1

Class attendance has been positively related to performance in first year accounting in the literature. This study confirms the findings. Table 6 indicates a significant positive correlation of 0.262 between class attendance and performance in FA1 ($p\text{-value}=0.027<0.05$). According to the literature, accounting is taught in a progressive way, with each week's lecture providing a foundation for the next week's lecture and missed classes can lead to problems in catching up. The researcher in this study supports this finding. Regular class attendance is therefore important for success in FA1.

5.7 Relationship between FA1 and Supplemental Instruction

In the study of Gracia and Jenkins (2003:27) regular class attendance was related to high motivation among students. This interpretation however has a bearing on the results concerning class attendance of Supplemental Instruction.

Supplemental Instruction (SI) is a support programme implemented at CUT in an effort to improve the FA1 results. According to the literature, support structures and programmes such as SI and mentoring can increase the performance of students. In this investigation SI attendance did not significantly correlate with performance in FA1 ($p\text{-value}=0.249>0.05$). The SI classes for FA1 were not well attended: 69% of the entire sample had a zero attendance rate and only 5.6% had an attendance rate of between 50% and 68%.

The obvious question following from these results is why students would be motivated enough to attend formal classes but at the same instance not attend supplementation instruction which is offered to them.

5.8 The effect of age on performance FA1

In this study no significant relationship was found between age and performance in FA1 ($p\text{-value}=0.240>0.05$) at the CUT. The age of the students in the sample ranged from 18 to 36 and most of the students (60.6%) were between the ages of 20 to 25. These findings are similar to a number of other studies as related earlier.

5.9 The effect of gender on performance in FA1

To measure the effect of gender and nationality as discrete nominal variables in the study, the means of the FA1 marks were calculated for each relevant group and t-tests performed on these means to determine levels of significance.

In the literature the findings on the influence of gender on performance in first year accounting was inconclusive.

There were 40 females and 31 males in this sample. The mean for the FA1 marks of females was 46% and that of the males 44.55%. Although the females had a higher mean, the t-test results showed no significant difference ($p\text{-value}=0.696>0.05$) between the performances of the two groups in FA1.

This study confirmed that gender is not a determinant of performance in FA1 at CUT.

5.10 Relationship between FA1 and nationality

As mentioned earlier, a study by Rankin et al. (2003) revealed that on average international students studying on campus perform better than domestic students studying either on or off campus.

There were 19 international and 52 South African students in this sample. The sample mean for the FA1 marks of the South African students was 47.33% and that of the international students 40%. According to the t-test the difference in performance is, however, not significant ($p\text{-value}=0.075>0.05$). In the CUT context, nationality is thus not a determinant of performance in FA1.

5.11 Relationship between FA1 and learning approaches

As discussed previously, the literature indicates that a deep learning approach rather than a surface approach is conducive to academic achievement. This study however revealed that the students at the CUT were more prone to applying surface learning approaches.

In the study the means for deep and surface learning were computed and the responses for deep and surface learning correlated with the performance of the students in FA1. The sample mean for deep learning was 2.5226 and that of surface learning 2.7491. The p-value was .017 for deep learning and .004 for surface learning which was significant at the 5% level. This indicates that there is a tendency among the students to rely more on surface learning than on deep learning. The reason for this phenomenon may only be speculated upon. The results may confirm the notion that students with prior knowledge of accounting are inclined to use more surface approaches, since 76% of the students had Grade 12 level knowledge of accounting. On the other hand it may be that teaching and assessment methods at CUT encourage surface rather than deep learning approaches. Another option to consider may be that the presence of a surface learning approach among students is linked to low motivation (Ames & Archer in Watson et al., 2004:194). The motivation levels of students were questioned when relating their low class attendance of Supplementary Instruction classes; yet their attendance of formal lecturing classes was significantly adequate. It is evident that much more research is needed in this area before any inferences can be made.

In Table 7 a summary is provided of the findings in this study.

Table 7: Findings on the factors determining success or failure in the CUT context

Factor	Relationship to FA1
M-scores	Significantly related
Matric Accounting	Significantly related
Matric English	Significantly related
Matric First language	Significantly related
Matric Mathematics	Not significantly related
Class attendance	Significantly related
SI attendance	Not significantly related
Age	Not significantly related
Gender	Not significantly related
Nationality	Not significantly related
Deep and surface approaches	Significantly related to surface learning

6. IMPLICATIONS OF STUDY AND CONCLUSION

The predictors of success/failure in FA1 identified in some studies and according to the current research are: the previous performance of the students; their performance in Grade 12 accounting; English; performance in first languages; and class attendance. Among these the most significant predictors of academic success in first year accounting at the CUT are the previous performance of students as measured by their M-scores and the performance in their first language. Proficiencies that are required for achievement in accounting are prior accounting knowledge and proficiency in English since it is the language of instruction at the CUT. Although the calculation of M-scores according to the previous norms will not be possible any longer from 2008, higher education authorities still need criteria to establish admission requirements for institutions. The abovementioned results present significant determinants for this purpose.

Identifying the factors that have an influence on the academic performance in FA1 may also be very useful in identifying high or low risk students at time of registration and formulating new admission requirements for entrance into the course. Students at risk of failing FA1 can be advised to choose other courses or the institution can decide on appropriate interventions and support services for these students.

The major concerns revealed by this study, which would relate to achievement in accounting, are the inclination towards applying a surface learning approach and students' lack of attendance of supplementary instruction classes presented to them for their own benefit. These two matters necessitate a thorough investigation into the motivation levels of first year accounting students at the CUT.

Statistical analyses and determination of possible predictors can and should play an important role in determining who should be allowed into first year accounting programmes. Not only should the admission process at the CUT (and other institutions) be continuously monitored, but future research should also focus on finding better and alternative ways for defining admission requirements in a very challenging and demanding higher education environment in South Africa.

The researchers in this investigation realised that research targeting role players in the field is of the utmost importance in addressing the accounting problem (with students and their lecturers the most important and best informed in this regard). It is for this reason that the second phase of the investigation at the CUT will be employing surveys of qualitative as well as quantitative nature among these role players. Such research can only enhance the findings in the first phase. A possible third phase may target the support provided at the institution and ways in which such endeavours can be effectively monitored and sustained.

There is perhaps no need to remind higher education institutions of the significance of the accounting profession in the South African economy or of the importance of addressing all types of inequality that may exist in the education and training sphere. One should rather prompt the higher/further education community to take better note of the paradigm shift needed in teaching and learning on the one hand and the responsibility and accountability of institutions towards their admitted students on the other hand.

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