

DETERMINANTS OF STUDENTS' PERFORMANCE IN MANAGEMENT ACCOUNTING

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ABSTRACT

Final examination results of Management Accounting in November 2009 were found to be poor with the failure rate of more than 40 percent. This triggers the question of what factors that may contribute to the failure. Therefore, the purpose of the study is to investigate empirically factors that may affect the poor performance of 44 students of Management Accounting from two programmes that are Diploma in Accountancy (AC110) and Diploma in Accounting Information System (AC120) in UiTM Perlis. Multiple regression was estimated using Ordinary Least Square in testing the significance of gender, program, prerequisite fulfilment, previous GPA, absenteeism, hours of attending early topics in Management Accounting, and part of studies. Results showed the number of hours attending lecture for early topics in Management Accounting and pre GPA are positively and significantly related to the score of management Accounting. On the other hand, absenteeism and students in higher parts are significantly and negatively associated with the score. The estimated results also indicated that students from AC110 performed significantly better than those in AC120. In addition students that fulfilled prerequisite costing paper performed much better than those who took the papers concurrently. The findings imply that prerequisite provide students with minimum level of understanding, thus create better chances of accomplishment.

Field of Research: Management accounting, prerequisite, academic performance

INTRODUCTION

At Universiti Teknologi MARA (UiTM), accounting students are expected to master the basic concepts and intermediate of management accounting in order to complete advanced accounting such as Management Accounting successfully. Many accounting educators and students would agree that this advanced accounting represents the most demanding encounter in typical accounting students at diploma level.

Many students face considerable difficulty in successfully completing this advanced accounting. The amount of material typically covered is substantial and the course requires of the student a significant increase in motivation, analytical ability, and academic effort over the usual principles or introductory cost accounting class. For some students in UiTM, there is a gap of more than a year between the time they take beginning cost accounting and the time they begin the advanced management accounting sequence. Finally, the prerequisite requirement is not required due to new open system that allows students freedom to enroll any subjects.

In addition, there are factors beyond the control of students but may affect their performance includes institutional issue such as large class size and heavy teaching load for the instructor. All of these factors may adversely affect the probability of student success. A high failure rate of 44.12% for the Management Accounting course in November 2009 triggers inquiry on factors that may cause the failure.

The purpose of this study is to investigate factors that may influence student failure in the Management Accounting class. Identifying the factors that are positively related to performance should enhance faculty understanding of the problems related to student failure in management accounting, whether that failure means dropping out of the class or receiving a less than passing grade. In addition, identifying these factors could result in accounting departments developing more effective enrollment policies, and prerequisites for the advanced course.

Regression will be used to test the relationship of several variables to performance in the Management Accounting class. The paper is organized as follows. We begin with a brief review of the literature, next we describe the setting for the study and the collection of data, then we present the results of the regression, and finally, we discuss the implications of the results and offer recommendations which might increase the probability of success in Management Accounting.

LITERATURE REVIEW

Numerous studies in variety disciplines such as accounting, management, mathematics, organizational behavior, finance and economics had been undertaken to see diverse factors that are associated with student achievement in college level courses. Such factors are gender (Mutchler, Turner, & Williams, 1987; Norman, 2003), prerequisites courses (basic accounting and mathematics) (Baard & Watts, 2008), previous grade point average (GPA) (Ali, Jusoff, Ali, Mokhtar, & Salamat, 2009), and interest of the students (Collett, Gyles, & Hrasky 2007). Some studies even focused on the relationship and impact of the performance of the students who had taken the introductory subjects and advanced subjects (Danko, Duke & Franz, 1992; Turner, Holmes & Wiggins, 1997; Krausz, Schiff, & VanHise, 1999).

Nevertheless, the findings are inconclusive. Baard and Watts (2008) demonstrated that discipline-specific prerequisite provide students with a foundation understanding need to undertake advanced courses as well as improve their chance of success. This finding was parallel to Huang, O'Shaughnessy and Wagner (2005), who found that students who had passed prerequisite subjects obtained significantly better grades than those who had not undertaken or failed the prerequisite subjects. Similarly, Turetsky and Weinstein (2003) concluded that the introductory accounting subjects Financial Accounting and Management Accounting had a positive correlation with students' achievement in Financial Management. The findings imply that prerequisite provides students with minimum level of understanding the concepts (Von Allmen, 1996), thus create better chances of accomplishment. Therefore students delaying taking advanced paper until their senior year because of a lack of understanding had defeated the objective of prerequisite and impeded their learning process (Boyd, Boyd & Boyd 2000).

On the other hand, Milkman, McCoy, Brasfield and Mitchell (1995) found that prerequisites are insignificant towards academic performance. This finding is consistent with the results of studies conducted by Cohn, Hult, Balch and Bradley (1998). Nevertheless, these studies focused on the needs of mathematics prerequisites with regards to the study of economics which is in dissimilar discipline as compared to cost and management accounting sequence.

Previous research also indicated that grade point average (GPA) is the key factor that determines the academic performance in taking prior accounting courses (Hicks and Richardson, 1984; Eskew and Faley, 1988; Jackling and Anderson, 1998; Ali, Jusoff, Ali, Mokhtar, & Salamat, 2009). Studies by Turner, Holmes and Wiggins (1997) proved that GPA significantly associated with the final grade achieved in intermediate accounting. The result found by Darayseh and Waples (2005) had strongly agreed that the cumulative GPA is the important indicator of success in the first intermediate accounting class. These are very consistent with the test score by Maksy and Zheng (2008), who found that GPA is one of the strong predictors of student performance.

Both findings by Mutchler, Turner, & Williams (1987) and Norman (2003) established that female students in accounting major performed better than male students. However, Tyson (1989) found that there are no significant different in the academic achievement between male and female students.

Finally, another important determinant is class attendance (Collett, Gyles, & Hrasky 2007; Chow 2003; Durden and Ellis 1995). Students who were absent has lower ability to respond correctly to the question relating to topic covered that day (Marburger, 2001) which leads to poorer performance (Arulampalam, Naylor, & Smith, 2007). Although, Park and Kerr (1990) and Schmidt (1993) found negative relationship between students' attendance and their performance but recent research by Ali et. al., (2009) further attested a positive impact of students' attendance on better cumulative GPA.

SETTING OF STUDY

Management Accounting course (MAF 310) is an advanced level course of the Cost and Management Accounting papers which is compulsory for the Diploma in Accountancy (AC110) and Diploma In Accounting Information System (AC120) students. The Cost and Management Accounting papers consist of three different levels, which are; Cost Accounting I (MAF 220), Cost Accounting II (MAF 270) and Management Accounting (MAF 310) which is advisedly to be taken independently by the students during part 3, part 4 and part 5 respectively. Unfortunately, the AC120 program excluded the Cost Accounting II (MAF 270) course in their study plan. Thus, AC120 program only

allows the students to take the introduction of Cost Accounting I (MAF220) during their part 3 and Management Accounting (MAF 310) in their part 4 studies. Unlike the AC110 program, this group of students had been exposed to the basic cost accounting, intermediate cost accounting and advance level of management accounting.

MAF 310 course focuses on the management accounting methods and techniques to be used by the management level in an organization. It starts and stresses with the importance of cost behavior, including the techniques of separating the mixed costs into fixed and variable types. The cost behavior topic is considered as the foundation topic which provides basic ground needed by the students for understanding the rest of other topics in MAF 310. However, this topic is considered as a review topic as it had been introduced briefly earlier in Cost Accounting I (MAF220). Meanwhile, the topic of techniques in separating the mixed costs into fixed and variable types had been discussed further in Cost Accounting II (MAF 270), that are taken only by AC110 students. This scenario has provides disadvantage for AC120 students as they were not exposed to the related techniques.

METHODOLOGY

Sample

The study population consists of 60 students who were enrolled in Management Accounting (MAF 310) during semester July-November 2009. Data were collected on the students' final grade, previous GPA, prerequisite fulfillment, absenteeism (interest), hours of attending foundation topics in MAF310, part (tenure) of studies, gender, and program.

Students who withdrew from the programming class before a final grade was assigned were removed from the sample leaving to 44 usable subjects.

Dependent variable

The dependent variable was the grade received by the subjects in Management Accounting (MAF 310). Grades were scaled with Cumulative Grade Point (GPA) with 2.00 and above as passing grades.

Independent variable

The independent variables included previous GPA, prerequisite fulfillment, absenteeism (interest), hours of attending foundation topics in Management Accounting, part (semester of studies) of studies, gender, and program.

Dummy variables were included for gender, program, and prerequisite fulfillment. We used a dummy variable to indicate if the student had taken the prerequisite or had not taken the prerequisite prior to completing Management Accounting. If the students took both MAF 310 and prerequisite simultaneously, they will be included as non prerequisite group.

In addition to prerequisite as measures of understanding fundamental cost accounting, we also included hours of students attending classes for early topics in Management Accounting. These topics would indicate the importance of understanding of basic cost and management accounting, thus support the substance role of prerequisite further.

The following model has been created to investigate factors which may determine students' performance in Management Accounting. The model hypothesized that the performance in advanced cost and management accounting depends on previous cumulative GPA at the university, prerequisite fulfillment, absenteeism (interest), hours of attending early topics in Management Accounting, part (semester) of studies, gender, and program.

The regression model examined for Management Accounting is as follows:

$$\text{GRADE} = B_0 + B_1\text{PREGPA} + B_2\text{PRE} + B_3\text{ABSENT} + B_4\text{HOUR} + B_5\text{PART} + B_6\text{GENDER} + B_6\text{PROGRAM}$$

GRADE	=	Grade of student in Management Accounting.
PREGPA	=	Grade point average at UiTM before enrolling in Management Accounting.
PRERE	=	1 if prerequisite fulfillment, 0 otherwise.
ABSENT	=	Number of hours absent from class for semester July-November 2009.
HOUR	=	Number of hours attending early topics in Management Accounting..
PART	=	Semester of studies.
GENDER	=	1 if male, 0 otherwise.
PROGRAM	=	1 if AC110, 0 AC120.

This multivariate model was estimated using Ordinary Least Squares (OLS) method.

RESULTS

Table I presents the demographic characteristics for the respondents. Forty four students made up of 26 students of Diploma in Accountancy (AC 110) and 18 students of Diploma in Accounting Information System (AC 120) were randomly selected from Faculty of Accountancy in UiTM Perlis. From these students, 8 were male and 36 were female. By prerequisite fulfillment, 26 students (59.1%) fulfilled the prerequisite subjects whilst another 18 (40.9%) did not.

Table I Demographic characteristics

	Frequency	Percentage
Gender		
Male	8	18.2
Female	36	81.8
Program		
AC 110	26	59.1
AC 120	18	40.9
Part		
4	18	40.9
5	9	20.5
6	1	2.3
7	7	15.9
8 and above	9	20.5
Prerequisite fulfillment		
Fulfill	26	59.1
Not fulfill	18	40.9

Table II represents the descriptive statistic for the variables used in the regression model. It can be noted that the mean of the grades in Management Accounting is 1.5673 on a four-point scale. This is considerably lower than the average cumulative GPA (1.875) recorded before students took Management Accounting. These are not surprising findings, given the substantial increase in difficulty and workload of Management Accounting over the introductory cost accounting sequence. In addition, students were absent from classes on average 16.7 hours (29.8%) out of 56 hours in the semester. Poor attendance resulted to poor ability to respond correctly to the question relating to topic covered that day (Marburger, 2001) which will result to poor performance (Arulampalam et. al.,2007). This is worsening by failing to attend classes on early topics in management accounting due to HINI outbreak (mean \approx 8 hours). Finally, it is found that students that sat for the paper are those in higher parts above 5. This is not surprise as students who delaying taking advanced paper until their senior year are due to their lack of understanding in the basic accounting (Boyd, Boyd, & Boyd , 2000).

Table II Descriptive statistics

Variable	Mean	Standard deviation
GRADE	1.5673	.90321
GPA	1.8705	.60177
ABSENT	16.7045	3.25476
HOUR	7.7955	2.28526
PART	5.5455	1.63472

Correlation statistics are presented in Table III. All independent variables are highly correlated with the dependent variable with an exception to gender. Both part of studies and absenteeism are negatively correlated with the grade scored in Management Accounting. The high correlation (-0.841) between pre grade point average and part of studies, suggests there may be a problem with multicollinearity in the regression model. Nonetheless, the dependent variable is highly correlated with both independent variables but with opposite effects. This implies that either pre grade point average or part of studies may provide additional predictive value to the model although with opposite impacts.

Table III Correlation statistics

	GRADE	PREGPA	PRERE	ABSENT	HOUR BASIC	PART	GENDER
GRADE	1						
PREGPA	.944*	1					
PRERE	.893*	.529	1				
ABSENT	-.952*	-.556	-.655	1			
HOUR BASIC	.949*	.390	.519	-.637	1		
PART	-.930*	-.841*	-.421	.668	-.433	1	
GENDER	-.228	-.231	-.153	.221	-.249	.232	1
PROGRAM	.875*	.645	.609	.508	.578	.599	.272

*. Correlation is significant at the 0.01 level (2-tailed)

Due to the multicollinearity problem between PREGPA and PART, two regression models have been estimated. The first model excluded the variable PART and the results are reported in Table IV. The regression results for the original model with inclusion of variable PART are reported in Table V. Both models are significant (Model I : $F=132.219$, $p=.000$, and Model II : $F=134.898$, $p=.000$) with a R^2 of 0.955 for model I and a R^2 of 0.969 for model II

, but as the correlations suggested, GENDER was not significant (Model I: $t = .647$, $p = .521$, and Model II: $t = .723$, $p = .474$).

When the independent variable, PART is included into the regression, there is virtually a change in the R^2 and adjusted R^2 of the model. Regression results for the final model are presented in Table V. It appears that PREGPA serves as a general indicator of academic ability and a proxy for achievement in the management accounting classes. In addition, the extremely strong relationship of understanding basic cost and management accounting papers (represented by PRERE and HOUR BASIC) and the final grade in management accounting is interesting and not surprising as this is consistent with findings by Turetsky and Weinstein (2003), Huang, O'Shaughnessy and Wagner (2005), and Von Allmen (1996). This is further proven that students that took basic and intermediate cost accounting scored significantly higher by 1.621 point as compared to those who did not. A comparison between programs proved that students of AC 110 performed significantly better than of AC 120 by .360 points. In other words, students in AC 110 received higher grades than students in AC 120. In addition, PART was significantly and negatively related to the grade received in Management Accounting. This verifies that senior students delayed taking advanced paper because of a lack of understanding (Boyd, Boyd, & Boyd, 2000) which finally affect their performance adversely. Finally, absenteeism was negatively and statistically significant as predictor of academic performance. In essence, it affirms absenteeism leads to poor academic performance (Arulampalam et. al., 2007; Ali et. al., 2009).

Table IV Model I - Regression Results Excluding PART

Variable	Coefficient	t stat	Sig.
Intercept	.675	2.794	.043
PREGPA	.534	2.905	.006
PRERE	1.055	3.275	.007
ABSENT	-.136	-2.918	.027
HOUR BASIC	.149	2.873	.023
GENDER	.057	.647	.521
PROGRAM	.160	2.090	.045
<i>F</i>	132.219		
<i>Sig F</i>	.000		
R^2	.955		
R_a^2	.948		

Table V Model II - Regression Results of the Original Model

Variable	Coefficient	t stat	Sig.
Intercept	1.172	2.154	.038
PREGPA	.534	4.109	.000
PRERE	1.621	3.828	.000
ABSENT	-.149	-4.457	.002
HOUR	.116	3.098	.004
PART	-.514	-.356	.001
GENDER	.055	.723	.474
PROGRAM	.360	2.219	.033

<i>F</i>	134.898
Sig <i>F</i>	.000
<i>R</i> ²	.969
<i>R</i> _a ²	.961

IMPLICATIONS AND RECOMMENDATIONS

The results of this study show that suitable foundation in fundamental cost and intermediate accounting knowledge (measured by a prerequisite fulfillment and hours attending early topics of Management Accounting) and overall level of academic ability (measured by cumulative GPA) are both important indicators of success in Management Accounting class. For the accounting educator, there are several possible implications of these findings, although it is important to recall the setting for the study. UiTM has essentially open admissions and there is no required GPA to take Management Accounting. For educators in similar university settings, we offer several recommendations.

In the absence of an overall GPA requirement, we recommend a minimum grade point to enroll in management accounting which may improve the probability of success. Basic and intermediate cost accounting is often the first upper level cost accounting class that students take and, at some universities, it has been used as the course that separates out the unqualified or unmotivated students who think they want to major in accounting. Setting a minimum GPA for prerequisite cost accounting (for example, a 2.0) to enroll in the course would underscore the difficulty of the material and perhaps motivate students to apply themselves immediately. In addition, this would highlight the fact that Management Accounting is a very large step up in difficulty from the first cost accounting course.

Using a filter assessment (such as students in higher parts and / or lower cumulative GPA) to identify students at risk at the beginning of the semester may help improve student success if required remedial work is provided for students scoring below average. Without the proper foundation in cost accounting, students may have to catch up the whole semester in management accounting. Requiring students to make up their deficiencies immediately should improve the learning environment for both students and instructors.

Supplemental instruction (clinics) or tutors may improve the potential for success of students who are motivated but simply lack the necessary study skills. Obviously, this type of extra help only benefits students who take advantage of it. Required tutoring or mentoring for students who have marginal GPAs or demonstrate their lack of foundation by scoring below average on the filter assessment may also improve student success.

In conclusion, filter assessment, supplemental instruction, and raising the entrance requirement are just few proactive measures in aiding students' success. It is hoped that further research will uncover other factors and measures that enhance student performance in Management Accounting.

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