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Predictors of academic performance for finance students

Women at higher education in the UAE

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Abstract

Purpose – The study uses data drawn from a senior finance major cohort of 78 female undergraduates at Zayed University (ZU)-UAE to investigate factors, which increase the likelihood of achieving better academic performance in an Islamic finance course based on information about socioeconomic background of female students. The paper aims to discuss these issues.

Design/methodology/approach – The research was conducted based on a survey designed to collect one-time individual data. Even though gender is considered as a variable affecting students' performance as documented in the literature, it shall not be addressed in this study as the sample of our survey is limited to the female gender only. Whereas the population under investigation is a cohort of undergraduate female students enrolled at a finance course: Islamic finance and banking (BUS426) at one of the national universities in the UAE. ZU was established in 1998 by the federal government of the United Arab Emirates to educate UAE national women, in 2008 ZU started to accept male students in a separated campus building. The university is organized academically into six colleges: Arts and Sciences, Business Sciences, Communication and Media Sciences, Education, Information Technology, and University College. The primary language of instruction is English, though graduates are expected to be fully fluent in both English and Arabic (Zayed University, 2016). BUS426 is one of the major courses offered to students majoring in finance. The course is taught in English and requires mathematical skills on basic levels, but is mostly dependent on logical and critical thinking skills.

Findings – The study found that among the socioeconomic variables tested that being married, having a highly educated mother and having high pre-entry qualifications were significant variables as they increase the likelihood of an "A grade" performance.

Originality/value – The extent to which socioeconomic factors and lifestyle could contribute to student performance outcomes in an Arab culture setting is not clear due to the scarcity of research on this particular topic; hence the study attempts to fill this gap.

Keywords Higher education, UAE, Academic performance, Women, Socioeconomic determinants, Multinomial logit, Finance students

Paper type Research paper

1. Introduction

Studying the determinants of academic performance analytically has long been an area of interest for economists and policy makers alike. The empirical research estimating the impact of students' socioeconomic backgrounds on academic performance is gaining more importance and relevance to policy making in enhancing human capital. Student academic performance is perceived to be the result of several factors, namely academic factors, family factors, and personal factors (Diaz, 2003). Even though most studies examining the determinants of educational productivity were conducted on younger cohorts of students at primary or secondary schools, it is equally important to study factors that affect academic achievement at the higher education level, as higher academic achievement is considered to

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have positive externality on the society, in the sense that it is reflected in a higher productivity level and higher living standards in the long run.

Economists are interested in academic achievement on grounds of its expected effect on future income equality, as well as on the external economic effect measured by society's productivity (Hojo, 2012); hence addressing what accounts for differential academic achievement through examining the socioeconomic status of households that can help policy makers address the social inequality problem indirectly over the long run (Hojo, 2012). The extent to which socioeconomic factors and lifestyle could contribute to student performance in an Arab culture setting is not clear due to the scarcity of research on this particular topic; hence our study attempts to fill this gap.

The aim of this study is to examine the relation between students' academic productivity and socioeconomic variables, specifically age, marital status, pre-entry educational qualification, parents' educational level, the number of siblings, in addition to some other student characteristics, such as the language of instruction at school, playing sports, having breakfast, and schedule of classes. The study focuses on women in higher education taking into account the cultural environment in one of the UAE federal universities. The main research questions of the paper are:

RQ1. Do older students perform better in the Islamic finance course? Is the parents' education a significant factor for the students' academic achievement?

RQ2. Is being married considered as an extra burden with a negative impact on academic performance?

RQ3. Do students who come from larger families perform worse than their peers coming from smaller families?

RQ4. Are English-educated students more capable of achieving higher grades than their Arabic-educated peers?

RQ5. Given the general student aversion to early morning classes, what is the role of early morning classes in explaining the grades of finance students?

Academic productivity in the paper is measured using the students' grade point relative to the total points, a reasonably objective measurement of a student's "on-job performance" provided by an evaluator based on tests of achievement (Hysenbegasi *et al.*, 2005).

The findings of this research are likely to have implications for all stakeholders; university administration and educators can reconsider improving student performance by offering tailored/customized programs and reducing the resource burden for support services, students can be aware of their lifestyle problems that can negatively affect their academic productivity, and parents can use the results of this study to identify the external class factors they can influence to improve their youths' academic productivity. The findings of this research could also be applied to other related courses in similar environments. The paper is structured as follows: literature review on the socioeconomic determinants of academic performance is briefly summarized in Section 2. Section 3 provides a description of the data used and the methodology applied. Results are presented and discussed in Section 4. We conclude in Section 5.

2. Literature review

Several research works (eg. Diaz, 2003) were conducted to justify poor academic performance, mostly focusing on three categories of causal factors, which are academic factors (teachers), family factors (parents), and personal factors (students). A number of studies have been carried out to identify and analyze the socioeconomic and personal factors that influence academic performance.

2.1 Students' age and academic performance

Several studies have investigated the role of age as a determinant of effective learning; however, the results are heterogeneous and inconclusive due to the varying contexts as subject of study and the cultural environment. According to (Barrow *et al.*, 2009) a student's age is positively correlated with better grades, as older students tend to show a better sense of commitment and better approaches to learning in terms of persistence and attainment. This is in accordance with the findings of Guney (2009) and Simpson and Sumrall (1979), while it is contradictory to other studies that find that younger students generally perform better than older students, as they have more recent experience with the educational system than their older peers (Al-Mutairi, 2011; Diaz, 2003; Nyikahadzoi *et al.*, 2013; Peiperl and Trevelyan, 1997). Older students tend to face learning difficulties and lack basic skills for effective studying. The inconsistencies of the role of age in academic performance could be seen from the perspective that older students are indeed mature, but they also have other responsibilities, for instance they could be employed, married with kids, or have other family responsibilities that may lead to lower academic performance. A contrary explanation as found in Schrouder and Rhodd (2013) is that older students tend to enrich the learning experience due to their experience acquired from employment or simply life experience, and they tend to perform better than younger students in the public administration program. A study conducted at the Arab Open University in Kuwait revealed that student performance is affected by age, nationality, and high school grades (Al-Mutairi, 2011).

2.2 Students' language proficiency

The level of foreign language competency, more specifically, the student's proficiency in English has a positive impact as founded by Harb and El-Shaarawi (2006). Another finding by Drennan and Rohde (2002) is the importance of English language at higher/advanced level courses compared to introductory-level courses. Students with better English language skills are expected to develop a better learning style, deeper understanding, and clearer self-expression (Peiperl and Trevelyan, 1997). An earlier study conducted on the students of the United Arab Emirates University concluded that competence in the English language and class participation are the most important factors positively affecting students' academic performance, while absence and the "number of credit hours achieved" have a negative effect (Nasri Harb, 2009).

2.3 Previous education experience/prior schooling

Students' pre-university academic performance can be a predictor of later success at university as some studies have pointed out by examining the correlation between A-level scores (at high school) and high performance at university, predicting that students who perform well at pre-university level have the motivation to continue to do so at university level too. In the UK, a study found a positive correlation between mean A-level scores of students and the proportion obtaining good degrees (Chapman, 1996). The same findings were reported in Naylor and Smith (2004) who applied an ordered probit model and found a significant statistical relationship between A-level scores and the probability of good academic achievement at university. Similarly, Anderson *et al.* (1994) found that a one percentage point increase in a student's Grade 13 average was associated with an increase in the final grade of the introductory economics course ECO100 by one percentage point. At Yarmouk University in Jordan, it was found that past academic performance is a significant determinant of future academic achievement in accounting principles courses (Ramadan and Quraan, 1994).

2.4 Socioeconomic characteristics of family

The emphasis on socioeconomic factors like family background, mainly the parents' education level and income, has been highlighted in several studies to report the positive impact of

more educated and higher-income parents (Win and Miller, 2005; Murnane *et al.*, 1981). As reported by Sticker and Rock (1995), parental education has the strongest impact on performance among other demographic variables like ethnicity, age, and gender. A highly educated father and mother are expected to be good role models and motivate their children in many ways to perform better at school, either through their higher expectations of their child finishing school on time with high performance, or through their ability to support their children academically and financially (Erdem *et al.*, 2007). A particular emphasis in the literature has been on the impact of mothers' formal schooling on their children's academic achievement. More educated mothers who tend to spend more time with their children are more likely to be attentive to their children's educational needs, and stimulate the intellectual interests and cognitive skills of their children at an early stage (Murnane *et al.*, 1981). In an elaborate longitudinal survey to examine the role of the demographic, socioeconomic, and psychological factors on tertiary entrance performance in Australia, Marks *et al.* (2001) found that the most important socioeconomic dimension for students is their parents' occupational status followed by their education and wealth. There was statistically significant difference with the post-secondary educational score of about 10 points higher for students whose parents are highly educated, especially for students with a better-educated mother.

It is equally important to examine how the link between parental characteristics and children's academic achievement varies with the number of siblings. Such demographic features can have implications on educational mobility and stratification if changing the relative number of siblings can affect a student's opportunities.

The size of the family or the number of siblings a student has might have an effect on academic performance through several channels proposed in the literature, with arguments of a tradeoff between size and quality of the family. One strand of studies postulates a negative correlation between family size and child quality in the form of educational attainment by proposing "a resource-dilution hypothesis" (Blake, 1981), where both material and non-material limited parental resources are divided up among each child. The more children the parents have, the smaller share of the resources each child gets.

2.5 Marital status and family obligations

Few empirical studies have explored the impact marital status has on academic performance. In the UK, Smith and Naylor (2001) found that among university graduates in 1993, married students tend to perform better than unmarried ones. The same finding was confirmed by a study on MBA students by Peiperl and Trevelyan (1997) who attribute the positive correlation between being married and academic performance explained by the spouse's financial and emotional support to ease the corresponding stress of studying. The same results were revealed from a study conducted in Kuwait, in which marital status has a positive significant effect on students' performance (Al-Mutairi, 2011).

2.6 Self-motivation

Students' self-motivation is defined in the literature as the "inner drive that directs a student's behavior toward the fulfillment of a goal and coping with challenges (i.e. academic success)" (Chowdhury and Shahabuddin, 2007). Self-motivation is classified as either intrinsic or extrinsic, where intrinsic motivation is based on the motivation to do a certain act for the satisfaction and interest in doing it regardless of a certain reward, while extrinsic motivation is the desire to engage in a certain activity due to a particular contingency being attached to it. There is plenty of evidence in the literature particularly at school level that shows intrinsically motivated students tend to have higher academic achievement, better coping strategies, higher self-esteem and higher intellectual performance (Vansteenkiste *et al.*, 2004;

Areepattamannil *et al.*, 2011). Quite on the contrary, findings for students who are extrinsically motivated tend to be less engaged, with lower capabilities and lower academic performance as found in (Becker *et al.*, 2010).

3. Methodology

3.1 Research context

The research was conducted based on a survey designed to collect one-time individual data. Even though gender is considered as a variable affecting students' performance as documented in the literature, it shall not be addressed in this study as the sample of our survey is limited to the female gender only. Whereas the population under investigation is a cohort of undergraduate female students enrolled at a finance course: Islamic finance and banking (BUS426) at one of the national universities in the UAE. This University was established in 1998 by the Federal Government of the United Arab Emirates to educate UAE national women, in 2008 it started to accept male students in a separated campus building. The university is organized academically into six colleges: Arts and Sciences, Business Sciences, Communication and Media Sciences, Education, Information Technology, and University College. The primary language of instruction is English, though graduates are expected to be fully fluent in both English and Arabic. BUS426 is one of the major courses offered to students majoring in finance. The course is taught in English and requires mathematical skills on basic levels, but is mostly dependent on logical and critical thinking skills.

3.2 Population and data collection

The study targeted two BUS426 female classes (total of 78 undergraduates) in Fall 2014 instructed by the same professor to control for both the gender's and the instructor's effect on students' academic performance. Primary data were gathered through the use of two instruments, namely the structured questionnaire and the students' academic performance (measured by their final grade in the course) published on the course's Blackboard. To measure students' academic productivity, the study has adopted the procedure used by several studies where students' grade at the end of the BUS426 course is used as the assessment criteria. Consequently, academic productivity is measured as the percentage achievement of the goals[1] for each student. Student productivity in percentage = (student grade in a certain task/maximum grade for that task) × 100. Furthermore, students are classified into five categories according to their academic productivity: A, B, C, D and F[2]. Using grade points of exams is not the sole evaluation method of assessing the cognitive skills of students, however, it is the most commonly used method (Wolfson and Carskadon, 2003; Hysenbegasi *et al.*, 2005).

The questionnaire. Based on information from the literature on socioeconomic variables that can potentially affect academic performance, students were asked to fill in a questionnaire about their demographic profile including their age, parents' educational level, number of siblings, and marital status. The questionnaire was sent to 78 students via SelectSurvey.Net.V4.100.000, and 100 percent of students have responded by answering the questionnaire. Each question was assigned five response options conducive to generation of ordinal and categorical data.

The sample. As observed in Table I of students' characteristics, more than 50 percent of students have achieved an academic productivity of 80 percent or higher. Regarding the age profile, about 53 percent of them are older than 21 years. Marriage is not a common phenomenon among this cohort of students, as only 18 percent of them are married, 8 percent of these have kids. It is interesting to note that 29 percent of students reported having family obligations of some sort, which extends beyond the group of married students.

Variable	*N*	%
Score		
A	17	21.8
B	26	33.3
C	27	34.6
D	8	10.3
Age		
20-21	25	32
Above 21	53	68
Marriage		
Married students	14	18
Having kids	6	8
Having family obligations	23	29
Mother's education		
Primary	15	19
Secondary	29	37
High school	13	17
University graduate	21	27
Father's education		
Primary	7	9
Secondary	7	9
High school	22	28
University graduate	29	37
Master's degree	11	14
PhD graduate	2	3
Siblings		
From 1-2 brothers/sisters	6	8
From 3-4 brothers/sisters	12	15
More than 4	60	77
Previous schooling		
Arabic School graduate	53	68
English School graduate	25	32
IELTS score		
More than 7.5	4	5
Between 6.5 and7.5	12	15
Between 5 and 6.5	62	80
Study hours		
3.5 hours or less	54	69
More than 3.5 hours	24	31
Reading hobby		
Yes	28	36
No	50	64

Table I. Students' characteristics

Parents' education has varied between mothers and fathers, where only 27 percent of mothers were university graduates, and 37 percent of fathers had a university degree. Moreover, a college degree was the maximum educational attainment for mothers, while 14 and 3 percent of the fathers had a Master's degree and a PhD degree, respectively. Preference in Arab countries tends to be toward larger family sizes, which was reflected on our sample; 77 percent of students have four or more brothers/sisters. The majority of students are Arabic school

graduates (68 percent), which can explain the low performance on the English language proficiency exam (IELTS), where about 80 percent of students have scored at the lowest range (between 5 and 6.5 points).

3.3 Estimation model

The paper employs the multinomial logistic regression technique, which applies maximum likelihood estimation to predict the probability that a student will achieve a certain grade percentage (A, B, C, or D) given a number of independent variables. The logit model expresses the logarithm of the odds of one grade vs another as a linear function of the explanatory variables. The model is expressed as:

$$\log\left[\frac{p}{1-p}\right] = a + xb + u$$

Where p is the probability that a student gets an A, given the values in a vector of explanatory variables X (x_1, x_2, …, x_n) with vector of coefficients b (b_1, b_2, …., b_n).

One advantage of a multinomial logit model over the ordinary least squares technique is the ability of the model to allow different values of the response parameters for each of the three different possible outcomes, which makes it possible to detect influences that may affect the probability of a certain outcome relative to the most frequent outcome in the sample (base category) without having much effect on the probabilities of the other responses.

Explanatory variables were divided into two groups; one group includes socioeconomic variables like the student's age, marital status, high school grades, parents' educational level, and number of siblings. The second group of explanatory variables includes students' commute time to campus, playing sports, schedule of classes, and the language of instruction at school. The sample's data show that category C is the most frequent category for the dependent variable; accordingly, it is the base category that we will use in our analysis. We are interested in the probability of being an exemplary student; therefore, our analysis focuses on the likelihood of a student to achieve an A grade in the BUS426 course.

4. Results and discussion

Independent variables are divided into two sets: socioeconomic factors and student characteristics. Each set is included in a separate logit model to find out the likelihood of achieving an A relative to the base category C, which is the most frequent category in the sample.

Table II shows the results of the relative risk ratio of the model using socioeconomic variables.

If a student's age increases by one unit, the relative risk for a high grade (A) relative to a lower grade (C) would be expected to decrease by a factor of 0.5 given that the other factors are held constant. However, this effect is insignificant. Such result contradicts with most of the literature that finds either positive or negative significant effect. This could be understood, as age variation is limited in the sample. Being married has a positive and significant effect on the likelihood of achieving an A, increasing it by 20 times compared to non-married students. The same findings were reported by studies conducted on university students in the UK and Kuwait (Peiperl and Trevelyan, 1997; Al-Mutairi, 2011). Marriage for a female student in the Middle East is a challenge; however, married students appreciate the value of time and have the inner motivation toward academic success according to the goal theory (Pintrich *et al.*, 2003), especially when complemented by financial support; UAE is considered to be among the high-income countries with an annual income of $38,360 per capita (http://data.worldbank.org/country/united-arab-emirates).

Variables	(1) Relative risk ratio
Age	0.486 (0.266)
Married	20.46 (25.54)**
Mother's education	
1. Primary	0.510 (0.674)
2. High school	0.154 (0.259)
3. University graduate	0.0393 (0.0704)*
Father's education	
1. Primary	1.115 (2.118)
2. Secondary	0.209 (0.376)
3. High School	0.916 (1.708)
4. Masters	2.255 (4.810)
5. PhD	2.61e-07 (0.00141)
School grade	21.78 (24.60)***
Siblings	3.774 (4.458)
Constant	337.3 (4,325)
Observations	78
Log-likelihood	−76.26
Prob > χ^2	0.000
χ^2	50.13

Notes: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table II. Socioeconomic regressions with relative risk ratio

These results are similar to the literature results at school level that show intrinsically motivated students have higher academic achievement (Vansteenkiste *et al.*, 2004; Areepattamannil *et al.*, 2011).

Regarding parents' education, despite the insignificant effect of the primary and high school education of mothers, students whose mothers hold a university degree are more likely to get A grades. This result is similar to most of the literature findings that confirms a strong positive effect of the parents' education, especially that of the mother, on student performance.

However, the sample data show no significant effect of the father's education. This could be explained by the cultural context, since mothers in the Gulf Region tend to spend more time with their children and are responsible for raising them and attending to their needs. More educated mothers are expected to be good role models who motivate and help their daughters toward better academic success.

Moreover, results show that it is 21.8 times more likely that a student with higher grades in high school will achieve an A grade at university. Since education is an accumulative process, a student who is keen to achieve high grades from an early age is more motivated to maintain the same standard of academic performance. These results are consistent with a study in the UK that reported a positive correlation between getting As in university courses and high school (Chapman, 1996), and with other studies that applied the probit model and found significant statistical relationship between A-level grades and the probability of good academic achievement at university (McNabb *et al.*, 2002; Naylor and Smith, 2004).

A bigger family in the sample has an insignificant effect on the likelihood of getting A grades, which does not agree with the wide range of studies that suggest a negative correlation between family size and the quality of the child in terms of educational attainment by proposing "a resource-dilution hypothesis" (Blake, 1981). The adequate financial resources for each UAE family could explain this contradiction. Hence dividing resources among more family members does not seem to be an issue in our sample.

Table III shows individual student characteristics and habits.

Even though the overall model is significant, none of the variables except class time was found significant. Given the students' aversion to early morning classes, it was found that attending an afternoon class yields 3.1 times more likelihood of achieving an A compared to attending a morning class.

5. Conclusion

Higher academic productivity is expected to have a positive impact on the society, especially in the long run. There is a wide range of personal, family, and academic factors that may influence the level of the academic performance of students. The study focuses on women in higher education, taking into account the cultural environment at one of the UAE federal universities, to find the factors that may increase the probability of the student to achieve exemplary academic productivity. The study concludes that socioeconomic variables do play a part in determining exemplary academic success.

It was found that marriage does not impede high academic performance as might be expected because the increased responsibilities of being married has a positive and significant effect, increasing the likelihood of achieving an A by 20 times compared to non-married students. Students whose mothers hold a university degree proved to be more likely to get A grades, as highly educated mothers are good role models who motivate and help their daughters toward better academic performance. Moreover, results definitively prove that education is an accumulative process, and having higher grades before university admission is a good predictor of continuing to achieve high grades at university. While a bigger family size in the sample has insignificant effect on the likelihood of getting A grades, this is explained by high family income in the UAE that is adequate enough not to negatively impact the academic success of family members. Other socioeconomic factors such as the student's age and the father's education have no significant impact on the likelihood of the student achieving exemplary academic success. On the other hand, none of the students' characteristics variables except the schedule of classes has a significant impact, as attending an afternoon class yields 3.1 times more likelihood of the student achieving an A grade compared to attending a morning class.

The findings of this research are likely to have implications for all stakeholders; the government, universities, students, and parents. The government should encourage women's higher education to enhance the academic success of their children. More support should be given to married students in the form of scholarships and childcare stations for their children at the university, as married students show high potential for exemplary academic success. Moreover, students shall be aware of the impact correctly planning

Variables	Relative risk ratio A
School lang	1.571 (1.090)
class time	3.080 (2.091)*
Sport	1.204 (0.861)
Breakfast	1.972 (1.320)
Commute time	1.001 (0.0339)
Constant	0.0534 (0.0855)*
Observations	78
Log-likelihood	−85.83
Prob > χ^2	0.0088
χ^2	30.99

Notes: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

Table III.
Student characteristics-multinomial regression

their daily schedule has on their academic success, and professors should be aware of the potential impact of early classes on their students' academic performance. University administration should reconsider the schedule of classes if they are concerned with the students' academic success. We believe our analysis offers some stylized facts that are likely to be mirrored in other related courses in similar environments of the UAE institutions, and we are of the view that the content of our findings potentially possesses broader implications.

Notes

1. The goal is the maximum total grade that the student can obtain from all course work at the end of the course time.
2. A: 90-100 percent, B: 80-89 percent, C: 70-79 percent, D: 60-69 percent, F: less than 60 percent.

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