REASONS FOR UNDERGRADUATE STUDENTS' DROPOUT: A CASE STUDY

[1] P Mani Joseph, [2] Nassor Suleiman, [3]Reena Abraham

[1]Professor, [2]Assistant Professor, [3] Senior Lecturer

Modern College of Business and Science, Muscat, Sultanate of Oman

Abstract: In this paper, survey data is used to investigate reasons for discontinuation from studies at a college in Oman. The aspect of data mining that can be associated with this study is that the whereabouts of the survey participants were extracted from the college past records of the College database. The analysis shows that economic reasons and high study loads are the two most frequently identified reasons with the former being the most identified one. On the other hand, poor teaching quality, and lack of facilities at the college are among the least frequent reasons attributed to student discontinuation. Furthermore, the analysis revealed that there is no statistically significant association between student's gender and the reason for discontinuing their studies at the college. Finally, among the variables: level of satisfaction, sponsor type, and gender, the former two are not statistically significant indicators of whether a student who discontinued his/ her studies from the college will move to another college, unlike the latter variable. More precisely, among students who discontinue their studies at the college, male students are more likely to move to another college to continue with their studies there.

1. INTRODUCTION

Student dropout has become a serious issue for the majority of higher education institutions around the world [1-4]. On average, world university student dropout rate is above 20 percent, with dropout rates pertaining to specific fields of Information Technology, Food Technology, Engineering being as high as above 45 percent [6]. The higher learning institutions have to allocate substantial resources for addressing this issue [5]. Every year, a large number of students are dropping out from higher education institutions in Oman and this dropout rate affects the scholarship system and the plan to develop an educated Omani workforce. To address this dropout, institutions should identify the exact reasons behind the student dropout. Even though every higher education institution in Oman is facing high dropout rates, no major study has been conducted to identify the reasons behind it.

This study is conducted based on the dropout student data from the Modern College of Business and Science (MCBS), Oman. MCBS is licensed by the Ministry of Higher Education, Research and Innovation, Oman and is accredited by the Oman Academic Accreditation Authority, the National Accreditation Agency. Student dropout at MCBS is also high and the proposed study aims to identify the reasons behind the dropout by applying suitable analytical tools.

The main objective of this research is to identify the reasons behind undergraduate student drop out at MCBS and by knowing which factors are either associated with or influence student dropout, the administrators can address such issues and provide students with the necessary additional support to overcome those issues and complete their studies successfully.This will be a huge benefit to MCBS as well as to students themselves and their families.

2. REVIEW OF SOME STUDIES ON STUDENTS' DROPOUT

Most of the studies carried out so far regarding university/college students' dropouts are based on data mining. According to Grossman et al data mining can be defined as an attempt to formulate, analyze, implement basic induction processes that facilitate the extraction of meaningful information and knowledge from very large unstructured data sets. The data mining approach to research studies has been made possible by the presence of computers that possess huge capacities to store and retrieve data. These computers are also powerful in processing the retrieved data collected from periodic routine activities of the higher learning institutions mostly through learning management systems (LMS). Below are some examples of studies related to students' dropouts based on the data mining approach.

- Ghadeer et al in [7], apply data mining approach to predict students' dropouts from Computer Science Students at the University of AL AQSA between 2005 and 2011. In this case, the decision tree (DT) method and Naïve Bayes (NB) approach were used to predict students' dropouts. The two methods were found to predict accurately the dropout status of the students with the accuracy of 98.14% and 96.86% for the DT and NB approaches, respectively.

- Liga Paura et al in [6], analyze the causes of first-year students' dropout rates using data from the engineering study program of the Latvia University of Agriculture (LUA). In this case, the survival analysis model is employed to predict the factors that influence students' dropout status. It is shown that the main reason for dropping out is the low secondary school knowledge and low motivation to study engineering. The factors that were shown to be insignificant in deciding the dropping out status include student's gender (male or female) and the source of financial sponsorship (government or self).

- Vanessa et al in [8] developed a predictive model to identify the earliest moment of a student dropping out of any semester in any undergraduate course. The model uses exclusive academic information available from the students' data of the Escuela Superior Polytecnica del Litoral (ESPOL), which is a public engineering-oriented university in Ecuador. The data for the model were extracted from all undergraduate programs within the period 2000 to 2019. The predictive model was shown to be very powerful despite ignoring the socio-demographic variables as well as pre-college entry information.

- Paul Baepler et al in [9], attempts through an essay, to demonstrate the connection between concepts of academic analytics, data mining in higher education and course management system data to guide the scholarship of teaching and learning.

The present study, based on a survey data, is different from most of the studies on students' dropout that are based on data mining. In this study, a survey questionnaire is administered to 201 sampled participants who were drop out cases from MCBS between the years 2012-2016. This is the period when the college was experiencing relatively higher dropout rates. The survey questions included socio-demographic variables and reasons for participants to drop out of the college. The objective of the study is to determine the major reasons that contribute to the decision to drop out of college. In the next section (section 3), the preliminary analysis is carried out where dropout numbers are summarized against some background variables in the study. In section 4, bivariate and multivariate analyses are attempted where the association is examined between reasons for dropping out from studies against a set of other key variables. Section 5 is a conclusion of findings from sections 3 and 4 of the study.

3. PRELIMINARY ANALYSIS OF SURVEY DATA

In this section a summary is presented for dropping out numbers by year, gender, the status of seeking advice before dropping out, sponsorship type, and a reason for discontinuing from studies.

3.1 Year-wise dropout

As for the number of students who dropped out by academic year, figure 1 below shows that, among 201 survey participants, the majority of the respondents dropped their studies at MCBS in the academic years 2013-14 and 2015-16. Notice that 35% dropped out in the academic year 2013-2014 whereas 26% dropped out in 2015-16. Further, it can be observed that 16% dropped in the academic year 2011- 2012.
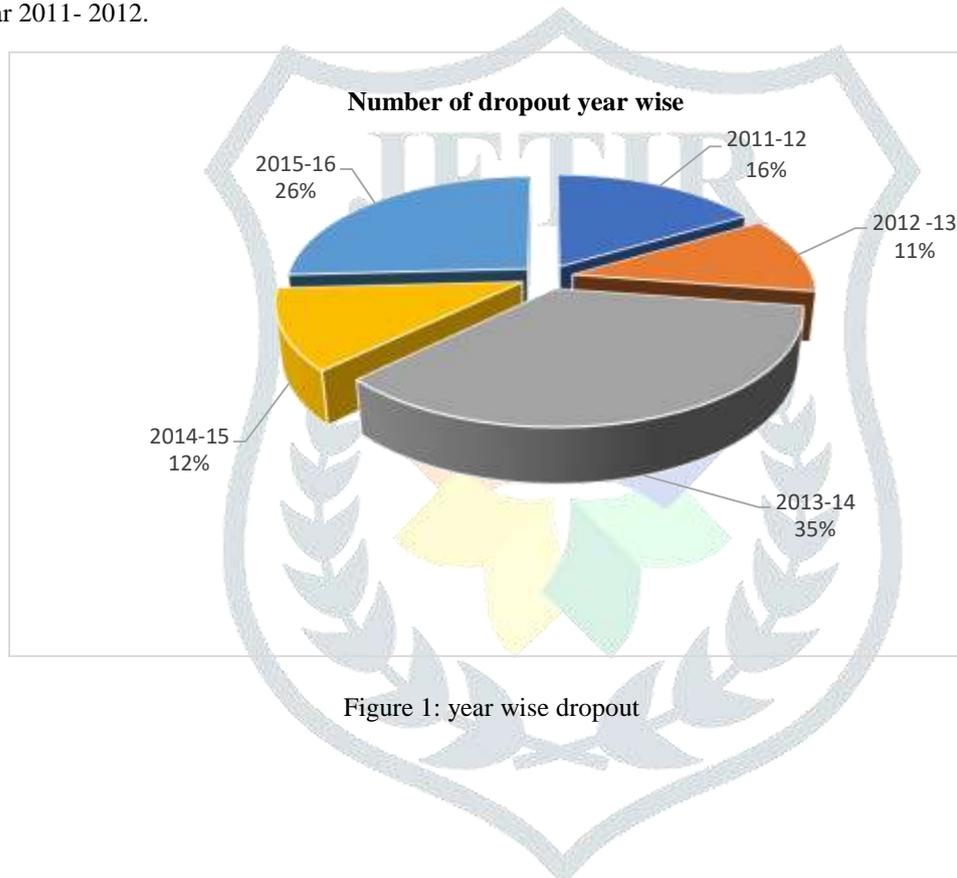

Figure 1: year wise dropout

3.2 Dropout frequency by Gender

According to the figure below, 51% of the students who dropped out are female students. But it is important to compare this data with the total admission figures which indicate that more than 70% of MCBS student population is females. This implies that male students dropped out more frequently compared to female students within the study period.
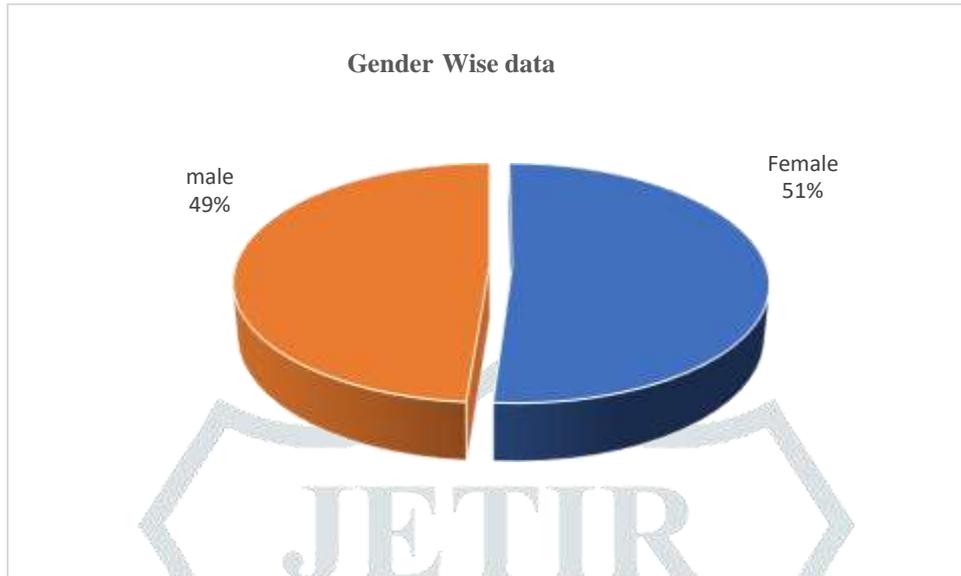

Figure 2: drop out frequency gender wise

3.3 Whether sought Advice before dropping out Decision

In response to a question on 'seeking advice before deciding to discontinue their studies, it can be observed from figure 3 below, that the majority of the respondents didn't seek advice from their advisors or other faculty members. They took a unilateral decision. This is, however, not a good sign of an effective decision-making procedure as students may change their minds after attending a counselling session.
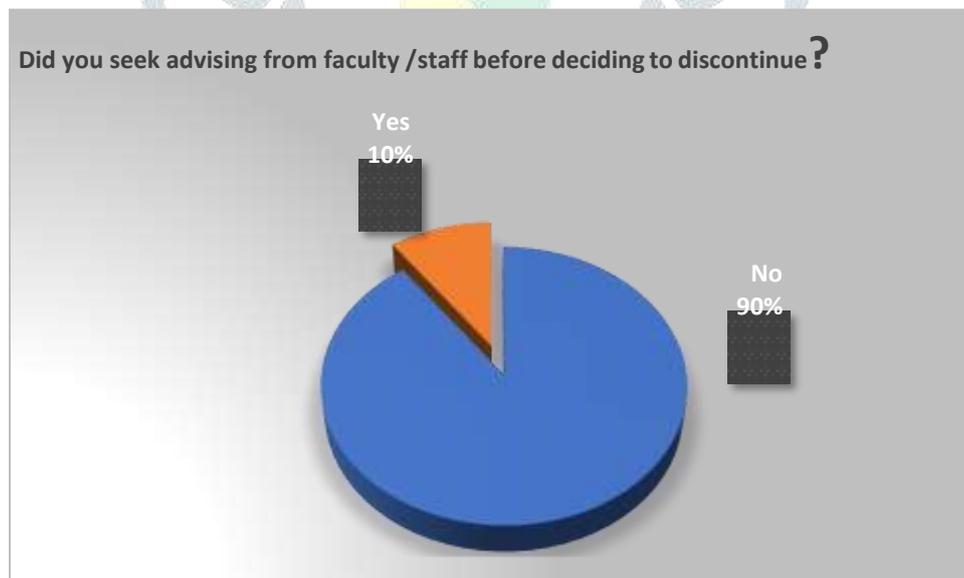

Figure 3: seeking advice before deciding to drop out

3.4 Dropout numbers by Sponsorship type

Majority of the dropping out students are sponsored by the Government. Government sponsorship can be categorized into sponsorships by various ministries. According to figure 4 below majority (more than 62%) of the dropping out students in the study period, were sponsored by the Ministry of Higher education and other ministries.
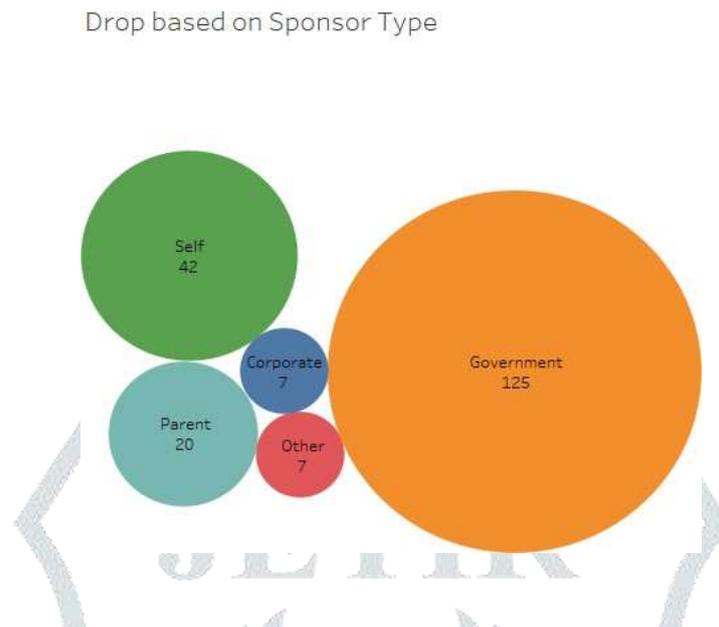

Figure 4: drop out numbers by sponsorship details

3.5 Drop out numbers by Reason for selecting MCBS

In response to a question on the reason for selecting MCBS for their studies, figure 5 below shows that 108 participants mentioned that it was the choice of their sponsor/parent and 41 participants mentioned that it was based on a friend's recommendation.

Figure 5: drop out numbers by reason of selecting to study at MCBS

3.6 Dropout numbers by Reasons for study Discontinuation

The following bar graph shows the frequency of each reason based on the sample data and it shows that most respondents discontinued their studies due to financial issues.
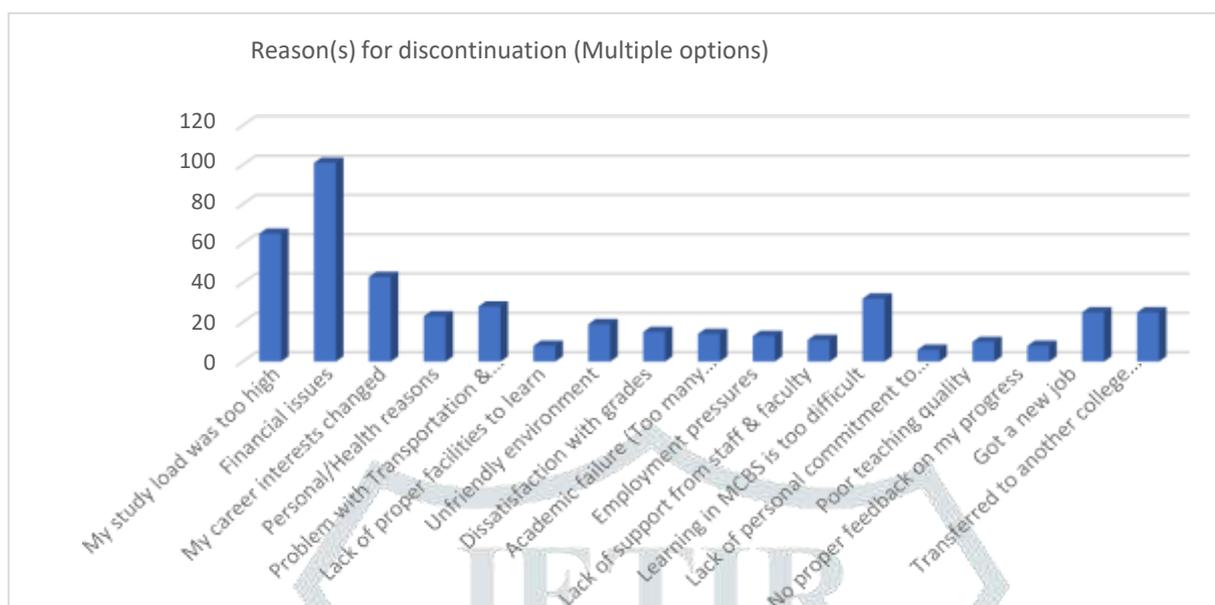

Figure 6: dropout frequency by reason for discontinuing studies

Other reasons worthy of attention are the high study loads and career interest change which are, respectively, the second and third most frequent in the sample data as shown in the bar graph. It is also of interest to note that poor teaching quality, improper feedback on a student's performance, and lack of proper facilities at the college are among the least frequent reasons in the sample attributed to students' dropout. This indicates in general, that students are discontinuing their studies for non-academic reasons with the exception of study load being a significant academic reason.

4. BIVARIATE AND MULTIVARIATE ANALYSIS

In this section, we use logistic regression to find out if there is any relationship between reasons for dropping out versus the gender of a survey participant and also if there is any relationship between the dropping out student who moved to another college against some background variables.

4.1 Association of Gender and Reason for Discontinuation

A binary logistic model was used to exploit the nature of the relationship between the student's gender on the one hand and the reason for his/her discontinuation on the other, where only the most significant reasons of discontinuation were considered. Table 1 below summarizes the relevant results obtained from the analysis.

Table 1: Cross-classification of Gender and Reason for Discontinuation

	High Study Load	Financial Issues	Interest Change	Transportation/ Accommodation Problems	Learning Difficulties
Male	33	48	17	14	20
Female	32	53	25	14	12
Total	65	101	42	28	32

The analysis based on the model shows that there is no association between gender and student discontinuation which is evident from the following SPSS output shown in Table 2.

Table 2: Wald tests of Significance for each Dummy variable in the Model

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1ᵃ	Financial_Issues	-.279	.273	1.045	1	.307	.756
	Study_Load	-.096	.310	.096	1	.757	.909
	Interest_Change	-.515	.363	2.008	1	.157	.598
	Learning_Diff	.491	.399	1.516	1	.218	1.634
	Transport_prob	-.115	.415	.077	1	.781	.891
	Constant	.216	.234	.850	1	.357	1.241

a. Variable(s) entered on step 1: Financial_Issues, Study_Load, Interest_Change, Learning_Diff, Transport_prob.

4.2 Indicators for Leaving to Another College

Finally, the study focuses attention on understanding the reasons behind students leaving MCBS to study at another college. Again, a binary logistic regression was considered to look for indicators or reasons that make the students leave to another college. The variables considered to predict the response (leave to another college or not) are 1- Sponsor type (measured in a nominalscale), 2- Satisfaction level (measured in an ordinal scale), and 3- Gender as a binary variable. As Table 3 below shows, the only significant predictor (at the 5% level of significance) of students discontinuing their studies to move to another college is gender. In particular, among students who discontinue their studies at MCBS, male students are more likely to continue their studies at another college.

Table 3: Significance of each independent variable in the model based on a Wald test.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	17.084	1	.000
Sponser_Type	3.440	4	.487
Satisfaction_level	.088	3	.993
Gender	3.959	1	.047

Dependent Variable: Moved

Model: (Intercept), Sponser_Type, Satisfaction_level, Gender

5   CONCLUSIONS AND RECOMMENDATIONS

This inferential study is based on a set of data collected from a sample of former MCBS students who discontinued their studies at the college. The study aimed, primarily, at identifying the reasons behind the discontinuation. The statistical analysis shows that financial reasons and high study loads are, respectively, the two most significant reasons attributed to student discontinuation. In fact, as much as half of the students who discontinued their studies did so due to financial reasons. On the other hand, poor teaching quality, and lack of facilities at the college were among the least frequent reasons identified by students. Furthermore, the analysis revealed that there is no statistically significant association between student's gender and reasons behind discontinuation from studies. However, the study shows that among the students who discontinue their studies, male students are more likely to move to another college than female students. Unlike gender, the level of satisfaction and the sponsor type are not statistically significant indicators of whether a student studying at MCBS will move to another college.

6   ACKNOWLEDGEMENTS

7   REFERENCES

[1] Eitel J.M. Lauría, Joshua D. Baron, Mallika Devireddy, Venniraiselvi Sundararaju, Sandeep M. Jayaprakash, "Mining academic data to improve college student retention: An open-source perspective ", Proceedings of the 2nd International Conference on Learning Analytics andKnowledge, Pages 139-142, ACM New York, NY, USA ©2012.

[2] Elakia et al, "Application of Data Mining in Educational Database for Predicting Behavioral Patterns of the Students ", International Journal of Computer Science and InformationTechnologies, Vol. 5 (3), 2014, 4649-4652

[3] Ghanboosi, Salim Saleem Al; Alqahtani, Abdulmuhsen Ayedh, "Student Drop-Out Trends at Sultan Qaboos University and Kuwait University: 2000-2011", College Student Journal, Vol. 47, No. 3, September 2013

[4] Ying Zhang, Samia Oussena, Tony Clark, Hyeonsook Kim, and Hyeonsook Kim. Use datamining to improve student retention in higher education - a case study. In ICEIS (1), pages190– 197,2010.

[5] Tinto, V. (2005). Epilogue: Moving from theory to action. In A. Seidman (Ed.), College student retention: Formula for student success. Westport, CT: ACE/Praeger.

[6] Liga Paura, Irina Arhipova, "Cause Analysis of students' dropout rate in higher education study program", 2nd World Conference on Business, Economics and Management-WCBEM 2013, Procedia-Social and Behavioral Sciences (109), pages 1282-1286 (2014).

[7] Ghadeer S. Abu-Oda and Alaa M. El Halees, "Data Mining in Higher Education: University student dropout case study" International Data Mining and Knowledge Management Process (IJDKP), Volume 5, No. 1, January 2015

[8] Vanessa Heredier-Jimenez, Alberto Jimenez, Margarita Ortiz-Rojaz, John Imaz Marin, Pedro Manuel Moreno-Marcos, Pedro J. Munoz-Merino, and Carlos Delgado Kloos, "An early warning dropout model in higher education degree programs: A case study in Ecuador, CEUR-WS.org/Vol-2704/paper5.pdf

[9] Baepler, Paul and Murdoch, Cynthia James (2010) "Academic Analytics and Data Mining in Higher Education", International Journal for the Scholarship of Teaching and Learning, Vol 4: No. 2, Article 17.