Determinant of Undergraduates' Academic Performance: A Case Study at a Public University in Seremban Campus

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ABSTRACT

Achieving academic success is important for every student's well-being and ability to contribute meaningfully to the educational institution. College students who succeed academically are more likely to transition successfully into adulthood and achieve success in their professional and financial pursuits. Academic success significantly influences individuals' actions and their relationships with peers and family members. Thus, this research aims to identify the factors influencing the academic success of undergraduate students at UiTM Seremban 3. The analysis revealed that most students came from families with a monthly income averaging RM4850, predominantly from B40 households, accounting for 50.79% of the sample. Additionally, females constitute the predominant gender among the undergraduate population. Furthermore, the application of logistic regression showed a significant association (p-value=0.000) between family income, particularly within the B40 category, and academic achievement, as measured by the Cumulative Grade Point Average (CGPA). In summary, the respondents expressed a satisfactory level of overall satisfaction regarding the determinants of academic performance among undergraduates. The study successfully achieved its objectives, as demonstrated by the model's fitness and the significant factors influencing academic performance.

1. INTRODUCTION

Education is a constitutional right of every citizen that prepares an individual to play his role as a sophisticated member of society. It is a vital aspect of one's life that provides numerous benefits and it is the cornerstone of success while also creating a plethora of options in our lives (Al-Shuaibi, 2014). According to Bhardwaj (2016), education is a fundamental human value, a societal requirement, the foundation of a peaceful future, and a symbol of liberty. Most of the education sector bases evaluations on students' academic performance but however, but some courses assess students' success primarily on their motor ability or physical prowess. On the other hand, education in a certain field aids people in thinking,

feeling, and behaving in ways that lead to their development and improve not only their well-being but also the community's (Al-Shuaibi, 2014).

As per Alyahyan and Dustegor (2020), in the field of education, it is customary for educators and educational authorities to measure academic performance using various methods, including continuous assessment, cumulative grade point averages (CGPA), and standardised test scores. The evaluation of academic performance serves as a quantitative measure to assess a student's achievements across various academic disciplines. It is essential to note that academic performance is just one of the several components that contribute to academic success. As indicated by Bakar et al. (2010), academic performance is impacted by a variety of factors, including students' motivation for achievement, their learning attitudes, the influence of peers on their learning, as well as their ethnic background and gender.

Student academic performance issues were frequently addressed in academic research and by the public. Therefore, it was important for educators to be aware of and examine elements associated with student achievements, such as achievement motivation and behaviour. Educators must possess an awareness and understanding of the determinants that impact student academic performance, as highlighted by (Bakar et al., 2010). As per findings, university students succeed better in a caring environment, and those who could achieve had strong achievement motivation. Academic success holds immense significance due to its strong association with positive outcomes. Individuals who are intelligent and educated, along with a higher level of educational attainment, tend to experience more benefits. These advantages include increased employability, stable job opportunities, higher income levels, access to health insurance, being less dependent on social assistance, being less likely to engage in criminal activity, being more active as citizens and compassionate volunteers and being happier and more confident. According to research by Adewale (2017), a person's environment, friends, and surroundings can all have an impact on the decisions they make on their success. It shows how the surroundings have an essential impact on how well students succeed.

Hence, the objective of this study was to evaluate the factors that influence students' academic performance. In this study, the independent variables include family income, gender, motivation, social activities, and institutional environment. These factors are being examined to understand their impact. Meanwhile, the dependent variable is the student's cumulative grade point average (CGPA), which is used to determine whether their grade point average is higher than or equal to 3.00 or lower. This choice is influenced by Potter (2022), which reveals that most colleges and institutions often consider CGPAs between 3.00 and 3.50 to be satisfactory.

2. LITERATURE REVIEW

Academic performance is a vital factor for each student's well-being and performance in the institution. According to Regier (2015), it is emphasized that academic performance is crucial for adolescents' effective social development and students who perform well in their education have a better chance of adjusting to their adulthood and achieving professional and financial success. The researcher agrees that emerging technology-demanding vocations will require strong academic performance in this increasingly modern society. Academic performance influences not only behaviour but also social connections with peers and family relatives (Nora et al., 1996). The variables examined in this study encompassed family income, gender, social activities, motivation and institution environment.

2.1 Gender

In terms of educational attainment and performance levels, female students perform better than male students in many industrialised countries, claims Smyth (2007). There was a higher likelihood of male students engaging in procrastination during class, which corresponded with lower levels of academic performance. Nevertheless, the study conducted by Balkis and Duru, (2017) found no statistically

significant difference in academic performance between male and female participants. Abu Bakar and Oguguo (2011) in their study also stated that there are no significant differences in the academic performance of male and female students in Mathematics and Science students. His findings also recorded that students CGPA between male and female students has no difference in that it is based on individual performance. Various genders may exhibit various talents and accomplishments. Yet, it's crucial to look at factors besides gender because Adzido et al. (2016) found that a student's academic performance is highly impacted by their family's income.

2.2   Family income

The monthly expenditure is contingent upon the household's income. The implementation of efficient financial management practices facilitates the achievement of familial objectives. According to a study by Lacour and Tissington (2011), students who live in poverty or have low family incomes often lack the resources they need to achieve the same levels of academic success as students who do not live in poverty. However, a study by Cooter et al. (2004) reveals that medical students from lower socioeconomic or lower family income range categories have success both in undergraduate and postgraduate clinical studies. This is consistent with the findings by Chiu et al. (2016), which found no connection between a student's sense of family income and academic success. The results indicate a lack of correlation between a student's academic performance and their family's income. The findings of Mushtaq and Khan (2012) align with the previous finding, indicating that there is no statistically significant association between parental income level and student academic achievement.

2.3   Social Activities

Some studies suggest that students who engage in social activities tend to develop better time management skills. Being involved in social groups or extracurricular activities may encourage students to plan their schedules more efficiently, which can positively impact their academic performance. Mensah and Nizam (2016) conducted a study that employed an objective analysis to examine the utilisation of social media among college students. The researchers investigated the potential impacts, both good and negative, of social media usage on students' academic performance and behaviour. The study's key findings indicate that social networking sites have a positive as well as negative impact on student's academic achievement and behaviour.

University students are drawn to social networking sites due to various factors, such as the convenience of accessing information quickly, albeit through channels that may lack security and reliability. This will reduce their ability to learn and research effectively. In addition, students who are heavily involved in the activities of networking sites during study have a lack of concentration and distraction.

2.4   Motivation

Motivation is the desire and readiness to learn that impacts academic success by maintaining a person's engagement and dedication to reaching goals, according to (Abdullah**a** et al. 2020). Furthermore, Can & Satıcı (2017) emphasised that a student's motivation is a critical factor in determining their level of success in any endeavour. Moreover, in other studies, Afzal et al. (2010) highlighted the significance of student motivation in higher education, as student achievement strongly correlates with professional life.

2.5   Institution Environment

According to Abdullaha et al. (2020), the physical environment of educational institutions, encompassing factors like building conditions, architectural design, and colour schemes, can exert a substantial influence on students' motivation to learn, ultimately affecting their academic performance. The authors additionally highlighted that specific institutions of higher education offer an environment that is conducive and positive, whereas others may present a less favourable climate. The difference can potentially contribute to gaps in academic achievement among students. Furthermore, it was claimed that a significant correlation exists between the institutional environment and academic success. The researcher suggested that the provision of enhanced facilities and the implementation of well-structured lecture sessions are factors that lead to the enhancement of students' academic performance.
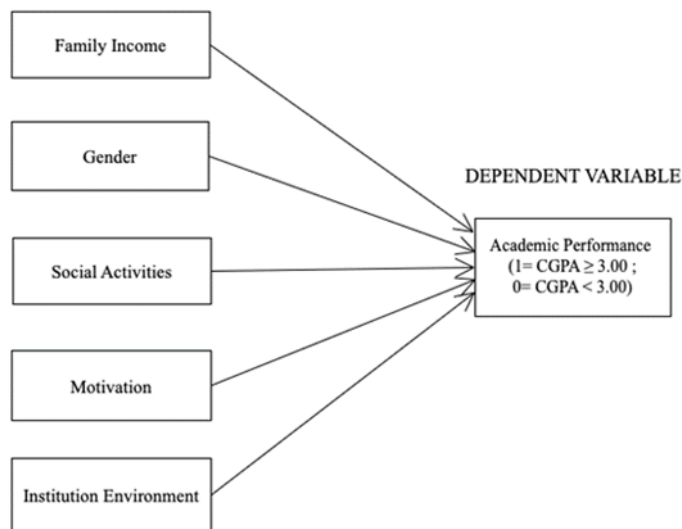

Fig. 1. The theoretical framework of the study

The theoretical framework is visually represented in Fig.1. According to the hypothesis, there is a significant correlation between the factors influencing academic achievement and the performance of students at the UiTM Seremban campus.

3.   METHODOLOGY

3.1   Sample Size

The population served by Academic Affairs consisted of 5203 students across all academic levels and disciplines. Krejcie and Morgan (1970) recommended a sample size of 382 responses from undergraduate students at the Campus based on that demography. The samples were chosen using convenience sampling.

Table 1. Distribution of respondents

Gender	Frequency
Male	194
Female	188

3.2   Data Collection Method

The researchers used an online survey to collect the data for this study. The survey questionnaire and the study's questions were adapted from a few studies, including those by Al Shawwa et al. (2015), Al-Shuaibi (2014), Kubischta (2014), Dhanapala (2021), and Romeli (2022). The questionnaire was divided into three parts. The demographic profile of the respondents included questions concerning the first two research variables, household income and gender. Sections A and B asked questions regarding social interactions and the environment of the institution, respectively, while Section C addressed questions about the respondents' motivation. Each segment used a Likert scale questionnaire with a five-point scale ranging from strongly disagree to strongly agree to determine the element that has the most impact on students' academic advancement.

3.3   Data Analysis

The logistic regression was used to determine which family income, gender, social activities, motivation, or institutional environment was the most significant factor influencing students' academic achievement. Logistic regression is a predictive analysis and a statistical technique it is used to describe and analyze the relationship between one dependent categorical variable and one or more independent variables (Schober, 2021). A logistic conversion of the odds, commonly known as logit, was used as the dependent variable in logistic regression, as shown below;

$$logit\ (P) = ln\ (\frac{p}{1-p}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \tag{1}$$

where; $P = Academic\ Performance\ (1 = CGPA \geq 3.00, 0 = CGPA < 3.00)$
                    $X_1 = Family\ Income$
                    $X_2 = Gender$
                    $X_3 = Social\ Activities$
                    $X_4 = Motivation$
                    $X_5 = Institution\ Environment$

The criteria to evaluate the logistic regression model is firstly omnibus test of the model coefficient. This test was used to examine if the new model with predictive variables including family income, gender, social activities, motivation, and institution environment was more significant than the baseline model. Therefore, the new model outperforms the baseline model if the p-value is less than 0.05.

The second criterion is the Hosmer and Lemeshow test for the goodness-of-fit of this model. The purpose was to analyse how well the data fits the model. In this test, p-values less than 0.05 indicated that the model is a poor fit. The test is only used for binary response variables. Hence, to have a good fit model, the p-value should be greater than 0.05. The next criterion is Cox and Snell R^2 and Nagelkerke R^2. The use of this method is to provide an indication of the amount of variation in the response variable explained by the model. The value of this R^2 must be positive and less than 1. Lastly, the p-value of Wald Statistics test was used to find out if independent variables which were family income, gender, social activities,

motivation, and institution environment in a model were significant. The variables are significant if the p-value is less than 0.05.

4.   RESULT AND DISCUSSION

4.1   Demographic profile

This study focused on investigating the determinants affecting the academic performance of undergraduate students at the UiTM Seremban campus. Three hundred eighty-two respondents all took part in this study. Table 1 displays the demographic profile of respondents.

Table 2. Demographic profile of the respondents

No.	Demographic	Frequency	Percentage (%)
	Gender		
1	Male	194	50.79
	Female	188	49.21
	Family income		
	< RM4850 (B40)	194	50.79
2	RM4,851 to RM10,970 (M40)	139	36.39
	> RM10,970 (T20)	49	12.82
	CGPA		
3	Below 3.00	134	35.00
	3.00 – 4.00	248	65.00

Table 2 provides a breakdown of undergraduate students at the Seremban campus based on their gender and monthly family income. The study's finding reveals that most students, totalling 194, came from B40 households, with an average monthly family income below RM4,850. Among these, 101 students are male constituting 26.44% of the total, while female students accounted for the slightly smaller percentage of 24.36%. Moving up the income range, the M40 category, encompassing monthly family incomes ranging from RM4,851 to RM10,970, includes a total of 75 male students and 64 female students. Lastly, the T20 category represents 18 male students and 31 female students with a monthly family income of RM10,971 and above. Based on the data, the distribution of academic performance among students at UiTM Seremban reveals that out of a total of 382 students, 134 students (35%) currently maintain a CGPA below 3.00. Conversely, 248 students accounting for 65% of the total, have a current CGPA of 3.00 or higher.

4.2   Factors Influencing Undergraduate Academic Performance

In this study, the adequacy of the model was assessed using both the Omnibus test of the model coefficient and the Hosmes and Lemeshow test. Both statistical tests commonly used in logistic regression analysis to assess the overall fit of the model. The model is deemed to perform effectively when the p-value from the Omnibus Test is less than the alpha level of 0.05, indicating statistical significance. Conversely, for the Hosmes and Lemeshow Test, the model is considered a good fit when its p-value exceeds the alpha value of 0.05.

Table 3. Omnibus test and the Hosmer and Lemeshow test

Model Evaluation	p-value
Omnibus Test	0.003
Hosmer and Lemeshow	0.954

The p-value of the Omnibus Test and The Hosmer and Lemeshow Test are shown in Table 3. Based on the Omnibus Test, the p-value of the test is significant which concluded that the predictors have a significant effect and improved the model prediction. The Hosmer and Lemeshow test were found to be more than 0.05. Therefore, there is enough evidence to conclude that the logistic regression model is a good fit for the data.

The next evaluation criteria pertain to the Cox and Snell R^2 and Nagelkerke R^2 values, which measure the extent to which independent variables account for the variation in academic performance. A higher value indicates a better fit for the model. The result is presented in Table 4.

Table 4. Pseudo r-square

Cox & Snell R Square	Nagelkerke R Square
0.051	0.071

According to Table 4, the Nagelkerke R Square value of 0.071, only 7.1% of the variance in the present CGPA can be attributed to gender, family income, social activities, motivation, and institutional environment, while the remaining 92.9% can be explained by other unaccounted factors. These values indicate that the model has limited explanatory power for academic performance, and other factors not included in the model may significantly influence academic performance. Sharma et al. (2017) found that the most prominent factors influencing academic performance include personal attitude, which accounts for 78%, teacher personality at 50%, and the availability of resources such as libraries and internet access, which has an impact of 78% on students' academic performance.

The result of the logistic regression analysis conducted using SPSS software are summarize in Table 5. To determine the significance of each independent varible's impact on academic performance, a comparison is made between the p-value and the alpha value. If the p-value is less than 0.05, it indicates that the variable has a statistically significant influence on academic performance.

Table 5. Parameter estimate

Variable	Estimate Coefficient	Wald Statistic	P-Value
Gender: Male	0.005	0.001	0.982
Family Income: B40	-	16.916	0.000
Family Income: M40	−1.024	7.407	0.006
Family Income: T20	−0.137	0.118	0.332
Social Activities	−0.046	0.924	0.337
Motivation	0.049	0.893	0.345
Institution Environment	−0.012	0.072	0.789
Constant	1.431	1.866	0.172

The precise parameter constraints being tested, which are the coefficients for gender, family income, social activities, motivation, and institutional environment being simultaneously equal to zero, are provided as the first item in this output. Since the p-value for family income is smaller than 0.05, it suggests a significant difference between family income and the academic achievement of undergraduate students. This finding is consistent with Hassan et al. (2020), who suggested significant differences in students' academic performance related to ethnic groups, type of secondary school, and family income. Strong financial status within families contributes to an enhanced learning process, ultimately leading to improved academic performance of tertiary students (Adzido et al., 2016). Additionally, Lacour and Tissington (2011) noted that students from low-income backgrounds frequently face challenges related to the availability of resources, which can impact their academic performance. A study by Smith and Johnson (2019) also found that family income significantly predicts academic achievement among undergraduate students, emphasizing the role of financial stability in educational outcomes.

The p-values of the Wald Statistics test for gender, social activities, motivation, and institutional environment in the model were not significant ($p > 0.05$). This indicates that these variables do not influence the academic performance of students at UiTM Seremban Campus. This finding aligns with the results of Balkis and Duru, (2017) and Abu Bakar and Oguguo (2011), which suggest that gender does not significantly influence students' academic performance. Social activities are found to have a negative impact on academic performance, similar to the study by Mensah and Nizam (2016). Furthermore, the impact of the COVID-19 pandemic on social interactions is noted as potentially contributing to the study's findings regarding the lack of social interaction among youngsters (Hoofman & Secord, 2021).

In contrast to Abu Bakar et al. (2022), this study does not find significant differences in CGPA related to motivation among undergraduate students at UiTM Seremban. Additionally, the study concludes that the institutional environment does not substantially impact students' academic achievement, contradicting the findings of Abdullaha et al. (2020). A recent study by Lee and Smith (2023) found similar results regarding the influence of social activities and institutional environment on academic performance among undergraduate students.

5. CONCLUSION

According to the analysis's findings, only family income significantly affects a student's academic performance at the UiTM Seremban campus; all other variables have no discernible influence. Family income and undergraduate students' academic performance are significantly correlated, as evidenced by the fact that the p-value for the family income from the categories of B40 and M40 was less than the alpha value, or 0.05. The study concludes that though higher family income may improve students' performance, low family income must not be an excuse for poor performance.

In a future study, it is advised that the researchers include additional factors that influence students' academic achievement, such as educational background of their parents (mother and father), attendance and punctuality, classroom engagement and student habits. Moreover, it was recommended to use a significant amount of data for this study because more data would result in more accurate conclusions and the most significant outcomes. Additionally, it's essential to acknowledge that the results of this study are specific to the Seremban campus. To enhance the generalizability of findings, future research should consider conducting similar studies on other campuses. Different campuses may have unique factors at play that can impact the academic success of undergraduate students.

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7.   CONFLICT OF INTEREST STATEMENT

The author declare that they have no conflicts of interest to disclose.

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