



Academic Performance Factors in Malaysia's Public Higher Education Institutions

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Abstract. Academic performance is a significant issue that calls for equal attention from all organizations, notwithstanding differences in political intention and goal. In light of this issue, this study is being carried out to find out more about undergraduate student performance at a Malaysian Public Higher Education Institution (PHEI). This study also aims to determine the relationship between numerous factors and the academic performance of PHEI students. A questionnaire survey and simple random selection were used to collect the data from 100 students. The data were examined using a program named SmartPLS 3.2.1. According to the statistics, only self-motivation and family influence have a significant direct relationship with academic performance, whereas all other traits have no impact on academic performance. The implication of this study would be beneficial, especially for future researchers who will discover new areas because, besides academic performance, other skills such as communication, problem-solving, and teamwork are also the best indicators in measuring the performance of students.

Keywords: Academic Performance, Malaysia Public Higher Education, Undergraduate.

1 Introduction

Academic performance has traditionally been used to measure the output of highly qualified graduates who can satisfy industry requirements, act as excellent leaders, and provide the nation with future labor resources. However, graduates frequently experience employment difficulties for a variety of reasons, with low academic performance standing out as one of the most important [1]. Records show that there were 170,300 unemployed graduates in 2019, an increase of 5.5% over the total of 161,300 in the previous year [2], and that the COVID-19 pandemic will cause the number to rise even further in 2020. As a result, issues concerning academic performance should worry those associated with the school as well as the government, corporate sector, and body

of authority. Academic performance is a crucial issue that demands dedication from all parties without compromising their differing political ambitions. The phrase "academic performance" refers to a student's success after finishing a course or subject at an institution. Through formative and summative evaluations, it assesses students' learning across a range of academic topics. It alludes to the results of students' attempts to meet certain academic objectives [3]. To draw attention to this problem, research has been conducted to look at the academic performance of diploma students from one of the PHEI in Kelantan, Malaysia. Furthermore, this study concentrated on one program from one faculty to determine the relationship between the recognized factors such as teaching methods, peers, self-motivation, and family influence and academic performance. The findings of this study are meant to help Malaysian graduates become more conscious of the impact that their environment might have on both their academic performance and the standard of education in Malaysia. The objectives of this study are: i) to identify the relationship between teaching methods with academic performance; ii) to find the correlation between peers with academic performance; iii) to confirm the relationship between self-motivation with academic performance; and iv) to determine the correlation between family influence with academic performance.

2 Literature Review and Development of Research Hypotheses

2.1 Academic Performance

According to the Theory of Performance (ToP), a performer can be either an individual or a team of people working together in a collaborative effort. The context, one's level of knowledge, one's level of skill, one's level of identity, one's features, and one's fixed variables are among the six (6) components that make up a performance, according to this theory [4]. Thus, when the theory is applied to their area of interest (academic performance), the researchers only considered personal and fixed characteristics. Since it is understood that academic performance would improve employment, numerous studies were conducted in Malaysia to identify the factors influencing academic performance in institutions. Academic performance is crucial for a university to produce results that transfer into future career success [5]. According to [6], assessments of academic performance should take into consideration the mutually agreed-upon objectives, which are typically stated in terms of the grade received on an exam, such as grade point average (GPA). As a gauge of student performance, the GPA system is widely used in educational institutions around the globe [7], [8], [9]. GPA is commonly used to replace aptitude and previous academic performance. GPA, for instance, it was found to be a trustworthy predictor of academic performance in studies utilizing data from the US. To minimize barriers to achieving and maintaining the required GPA, university administrators, professors, and students must identify and improve certain factors [10].

2.2 Factors Influencing Student's Performance

Academic performance is influenced by a variety of factors, including teaching methods, peers, family influences, and self-motivation. [11] and [12] asserted that the main objective of teaching is to make sure that the learner goes through at least minimal changes. To ensure information transfer, teachers should implement the most effective

teaching methods to complete the learning objectives. To ensure that the student will gain the most from the learning process, the teachers might choose a few ways. A teacher-centered approach is the first type of teaching method, which is less practical because it places a greater emphasis on theory and memorization. The alternative strategy is emphasizing active learning while advancing students' understanding and discoveries. This method often encourages students to engage in critical thinking, analytical research, and enjoyment. The third tactic is the teacher-student interactive technique, which combines both student and teacher-centered strategies. This kind of training is effective in boosting academic performance. Thus, the authors' main hypothesis is H1: Academic performance is positively correlated with teaching method.

Peers significantly influence a student's life. According to [13], a peer is someone who holds the same beliefs as them, behaves similarly, and is similar to them in terms of age or ability, such as a friend or classmate. More interactions between students and their peers occur both inside and outside of the classroom. They may be impacted by the habits, outlooks, or other characteristics of their peers, most likely. Peer influence affects academic performance not only at the basic and secondary levels but also at the university level, according to past studies [14]. Most secondary school pupils are more interested in developing relationships with their peers than with their teachers and parents, according to a different survey [15]. As a result, students must engage with the proper peer group. The right peer group may certainly have an impact on students' interests, motivate them to continue their studies, and enhance their academic performance, as claimed by [16]. The bulk of past studies argued that there is a strong link between academic performance and peers. For instance, [17] studied the effect of friends on students' performance and found a link between friendship and academic performance. Thus, the authors' hypothesis is H2: Academic performance is positively correlated with peers.

A student's willingness, need, desire, and compulsion to engage in and succeed in the learning process are all examples of motivation, according to [18]. There are two kinds of internal and extrinsic motivation. Extrinsic motivation often refers to outside forces or ideals that spur action or educational pursuits. For instance, rewarding and applauding good labour. Intrinsic motivation, often known as self-motivation, refers to internal forces that influence a person's behavior or ability to learn. Academic performance is strongly correlated with both students' intrinsic and extrinsic motivations, according to [19]. The study found that students who are inwardly motivated are more dedicated to their studies and pleased with their education than students who are externally motivated, who appear to be more focused on winning awards, receiving better marks, and fitting in with their peers. Students who demonstrate high levels of intrinsic motivation (self-motivation) outperform extrinsically motivated students in terms of academic performance, according to [20]. According to [21] research, pupils are more intrinsically motivated to succeed academically than extrinsically motivated individuals. As a result, the authors' hypothesis is H3: Academic performance is positively correlated with self-motivation.

Additionally, a study by [22] found that family issues have an impact on the academic performance of secondary school students. It was concluded as a result that parents contribute to their children's academic performance by fostering a joyful home environment. A study by [23] found that one of the elements affecting female students'

academic performance at Tabuk University is their family. The authors therefore hypothesize H4: Academic performance is positively correlated with family influence.

A conceptual framework employing hypotheses H1 to H4 is suggested to comprehend the links as shown in Figure 1 based on a thorough evaluation of prior investigations.

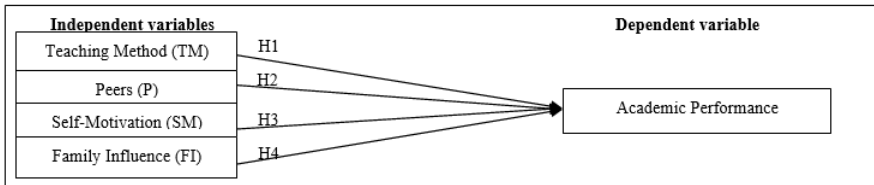


Fig. 1. A conceptual framework with hypotheses development between factors and academic performance

3 Research Methodology

Given their knowledge of the pertinent subject, respondents who are aware of their academic performance are students. Therefore, the study's sampling units are students. Straightforward random sampling is used in this survey. Every member of the subset has an identical chance of being selected from the statistical population as a whole in a simple random sample. According to the sample size calculator, the sample size is 100 with a population of 300, a margin of error of 5%, and a confidence level of 95%. The respondents chosen were given a set of questionnaire to complete and return straight away to the researcher using simple random sampling. After the screening process, only 100 respondents were considered qualified for the study. There included students from a variety of programs. A set of questionnaire with three sections (A: Demographics, B: Independent Variables, and C: Dependent Variable) adapted from diverse sources was given to each respondent. The rating system in the questions used Likert scales with five-point ratings. Using SmartPLS 3.2.1 and the Structural Equation Modeling Partial Least Squares algorithm (SEM-PLS) analysis method, the relationship between the variables and academic performance was examined. SEM-PLS was utilized by the researchers to examine the data utilizing measurements and structural model evaluations.

4 Result

4.1 Demographic Profile of the Respondents

The demographic profile of the study's respondents is broken down into four (4) elements based on the analysis with SPSS. The gender, program, current semester, and CGPA are among them. The outcome reveals that out of the 100 responses analysed, 73 (or 73%) of the respondents were female, and the remaining 27 (or 27%) were male. More than half of the respondents from the Business Studies program were from Semesters 3 and 4, including 45 respondents from Semester 3 (45%), 46 respondents from Semester 4, and 9 respondents from Semester 5 (9%). According to the investigation, the majority of them had outstanding academic performance. It is proven by their CGPA and the majority of them had 3.00 and above. In detail, 23 respondents (23

percent) got 3.51 to 4.00, and 45 respondents (45%) got 3.01 to 3.50. The rest got 2.51 to 3.00 which is 22 respondents (22%) and only ten respondents (10%) got 2.00 to 2.50.

4.2 Measurement Model Evaluation - Internal Consistency Reliability

Internal consistency reliability, which comprises Cronbach's Alpha and composite reliability, is the first criterion to be established in the measurement model. To demonstrate the modest dependability applicable to the research, the composite reliability values should, specifically, be higher than 0.70 [24].

Table 1. Internal consistency reliability.

Construct	Item	Loading range (>0.70)	Composite Reliability (>0.70)	Cronbach's Alpha (α) (>0.60)
Teaching Method (TM)	15 items	0.702 – 0.908	0.947	0.940
Peers (P)	7 items	0.909 – 0.972	0.982	0.979
Self-Motivation (SM)	7 items	0.757 – 0.934	0.912	0.904
Family Influence (FI)	6 items	0.912 – 0.945	0.969	0.961
Academic Performance (AP)	7 items	0.845 – 0.990	0.974	0.969

The composite reliability and Cronbach's Alpha values for teaching method, peers, self-motivation, family influence, and academic performance are shown in Table 1 using SEM-PLS. The values between 0.70 and 0.90 are regarded as good and satisfactory, and all of the constructs exhibited strong composite dependability [25]. The teaching method was reported to have a Cronbach's alpha value of 0.940, peers at 0.979, self-motivation at 0.904, family influence at 0.961, and academic performance at 0.969. All of these values are significantly higher than the minimum acceptable internal consistency level of 0.60 [25]. As a result, this shows that the composite reliability for each construct is better than 0.70, and Cronbach's Alpha values are above 0.60, indicating satisfactory reliability.

Measurement Model Evaluation - Convergent Validity.

According to [26], loadings, average variance extracted (AVE) and composite reliability are frequently used to determine whether a measurement model is converging. The authors employed the factor loading value of more than 0.70 as recommended by [24]. Except for BTM3 (0.453), BF15 (0.279), and BAcademicPerformance1 (-0.325), all of the loadings are greater than 0.7. These data need to be removed. The composite reliability and average variance extracted (AVE), in addition to the loading values, are other factors in evaluating the convergent validity. The revised loading values are displayed in Table 2 following the deletion of 3 entries. All of the loadings are higher than the advised value of 0.7 [27]. The construct varies from 0.912 to 0.982, above the suggested value of 0.7 [27], and the composite reliability values show how much the construct

indicators reflect the latent. Since the construct is thought to account for more than half of the variance, its AVE should be higher than 0.50. The AVE values below 0.50, however, suggest that there are still additional faults in the items that have not yet been fully explained by the construct. As a result, all of the AVE values at the construct level, as displayed in Table 2, point to the measurement model's convergent validity. The AVE score fell between 0.562 to 0.897.

Table 2. Convergent validity of measurement model (after deletion of 5 items).

Construct	Loading range (>0.70)	CR (>0.70)	AVE (>0.50)	Cronbach Alpha (α) (>0.60)
Teaching Method (TM)	0.702 – 0.908	0.947	0.562	0.940
Peers (P)	0.709 – 0.972	0.982	0.897	0.979
Self-Motivation (SM)	0.757 – 0.934	0.912	0.600	0.904
Family Influence (FI)	0.912 – 0.945	0.969	0.862	0.961
Academic Performance (AP)	0.845 – 0.990	0.974	0.864	0.969

Measurement Model Evaluation - Discriminant Validity.

The Heterotrait-Monotrait (HTMT) ratio of correlations was proposed by [28] as a rigorous approach to achieving discriminant validity. When using HTMT as a criterion, it is compared to a predetermined threshold. A result of 0.90, according to [29], indicates a lack of discriminant validity. Table 3 demonstrates that discriminant validity has been established.

Table 3. Heterotrait - Monotrait (HTMT).

Constructs	1	2	3	4	5
1. Academic Performance	0.536				
2. Family Influence	0.335	0.168			
3. Peers	0.565	0.221	0.789		
4. Self-Motivation	0.627	0.708	0.534	0.571	
5. Teaching Method					

Note: Diagonals (in bold) represent the average variance extracted while the other entries represent the squared correlation.

4.3 Structural Model Evaluation - Assessment of Collinearity among the Constructs

The structural model includes a study of how the latent variables or constructs relate to one another. Examining potential collinearities between each set of constructs independently for each structural model subpart is the first stage in the structural model

evaluation process. The values of the analyses' Variance Inflation Factors (VIF) are displayed in Table 4. Every VIF output was far below the threshold of 5. Therefore, the structural model does not have a problem with construct collinearity. The researchers can therefore carry on studying the default report's route coefficient, R^2 , f^2 , and Q^2 .

Table 4. Collinearity assessment of the constructs.

Construct	VIF (<5)
Teaching Method	3.452
Peers	2.001
Self-Motivation	1.991
Family Influence	1.042

Structural Model Evaluation - Assessment of Path Coefficients.

Path coefficients show that the correlations and hypotheses are strongly validated empirically. Table 5 confirms that there are just two (2) significant path linkages. Family influence considerably contributes to explaining academic performance with the β value of 0.247 (25%), while the exogenous construct of self-motivation significantly contributes with the β value of 0.355 (40%) to that explanation. The correlations between teaching method, peers, and academic performance, however, are not statistically significant with the β values of -0.078 (P -value 0.585) and -0.334 (P -value 0.651), respectively. The parameter's t -values represent the strength of the association it represents, with a larger t -value indicating a stronger link. The bootstrapping procedure using a 5000 sample was used to obtain the t -values of each coefficient [30].

Table 5. Significant testing results of the structural model path coefficients.

Structural Path	Path coefficient (β)	t -value	P -value
Teaching Method \rightarrow Academic Performance	-0.078	0.546	0.585
Peers \rightarrow Academic Performance	-0.334	0.452	0.651
Self-Motivation \rightarrow Academic Performance	0.355	2.526	0.012**
Family Influence \rightarrow Academic Performance	0.247	3.552	0.000**

Structural Model Evaluation - Assessment of Coefficient of Determination (R^2).

The squared correlation between the actual and anticipated values of a particular endogenous construct is used to produce the R^2 value, which is a measurement of the model's prediction accuracy. The R^2 value does not have a set standard. [31] recommended using the threshold values of 0.67 (substantial), 0.33 (moderate), and 0.19 (weak) to determine the R^2 value. The R^2 value for the endogenous construct that meets the required level of R^2 is displayed in Table 6. According to [31], the model generally explains a "substantial" percentage of the data. The proposed theoretical model for this research model's endogenous variable explains 74% or 0.724 of the variations in academic performance, which is a very excellent level of model predictability. As a result, this model has excellent predictive ability and is relevant.

Table 6. Determination coefficient (R^2).

Endogenous variable	R^2 value	Threshold
Academic Performance	0.742	≥ 0.67 (substantial)

Structural Model Evaluation - Assessment of Effect Size (f^2).

According to [24], the effect size (f^2) is a metric used to evaluate the relative influence of an exogenous (predictor) construct on an endogenous construct. [32] established the f^2 value of 0.02 as a minor effect, 0.15 as a medium effect, and 0.35 or more as a large effect. These values can be used to determine the relative effect size of an exogenous construct on an endogenous construct. Table 7 displays the outcome. With f^2 effect sizes of 0.006, 0.170, 0.202, and 0.080, respectively, the exogenous constructs of teaching method, peers, self-motivation, and family influence have an impact on explaining the predictive value of the endogenous latent variable, namely academic performance. In summary, most of the constructs have a medium and small effect size in producing the R^2 of academic performance.

Table 7. Effect Size (f^2) of the latent variable.

Structural Path	Effect size (f^2)	Rating
Teaching Method \rightarrow Academic Performance	0.006	Small
Peers \rightarrow Academic Performance	0.170	Medium
Self-Motivation \rightarrow Academic Performance	0.202	Medium
Family Influence \rightarrow Academic Performance	0.080	Small

Note: The values of f^2 ; 0.02=small, 0.15=medium, 0.35=large

Structural Model Evaluation - Assessment of Predictive Relevance (Q^2) and Blindfolding.

Based on the SEM-PLS blindfolding technique, the Q^2 value is a gauge of predictive relevance [24]. A reflecting endogenous latent variable's Q^2 value greater than zero in the structural model implies that the path model is predictively relevant for this specific construct. The Q^2 values are produced as given in Table 8 by using SmartPLS3.2.1 to run the blindfolding approach. All Q^2 values are significantly higher than zero, supporting the model's ability to forecast the reflecting endogenous latent variables.

Table 8. Predictive relevance (Q^2) of endogenous (omission distance=7).

Relationship	$Q^2 > 0$
Teaching Method \rightarrow Academic Performance	0.460
Peers \rightarrow Academic Performance	0.767
Self-Motivation \rightarrow Academic Performance	0.470
Family Influence \rightarrow Academic Performance	0.721

Overall Results of Structural Model Analysis.

Table 9 provides an overview of the findings of the hypothesis testing. Overall, only two (2) hypotheses are accepted and significant at $p < 0.01$. It can be concluded that self-motivation (H3; $\beta = 0.355$, $t = 2.526^{**}$) and family influence (H4; $\beta = 0.247$, $t = 3.552^{**}$) have a strong direct relationship with academic performance. In conclusion, two (2) hypotheses are ultimately approved for this study.

Table 9. Results of the structural model analysis (hypotheses testing).

Hypotheses	Relationship	Standard Beta (β)	Standard Error	t-value	f^2	$Q^2 > 0$	Decision
H1	Teaching Method → Academic Performance	-0.078	0.233	0.546	0.006	0.460	Not Supported
H2	Peers → Academic Performance	-0.334	0.308	0.452	0.170	0.767	Not Supported
H3	Self-Motivation → Academic Performance	0.355	0.222	2.526**	0.202	0.470	Supported
H4	Family Influence → Academic Performance	0.247	0.131	3.552**	0.080	0.721	Supported

* 1.645 - 2.32 ** 2.33 and above ** $p < 0.01$

5 Discussion and Conclusion

According to a study by [33], motivation is positively correlated with students' performance of an effective study approach, which is favourably correlated with more study effort. Some studies showed that with 130 students, academic performance requires both students' self-motivation (hard effort) and strong parental socioeconomic background, while self-motivation seems to be more of a deciding success factor. According to a study by [38], there is a connection between students' school adjustment and their family environments as well as their school environments. These are in line with the findings of this study which show that both motivation and family influence are related to the academic performance of public higher education institutions.

Furthermore, achieving academic performance requires the instructor, student, and university to be able to meet their objectives. The teacher, pupils, and their future careers are all significantly impacted by the study of student performance in their school [35]. For students, teachers, and university policy-makers, the significance of student performance has several ramifications [36]. Since the teaching-learning process has a substantial positive impact on the student's overall development, it is crucial to guarantee consistency in academic performance in a growing country's educational system [37].

The results of this study will help university policymakers by enhancing faculty and student understanding of the educational system. The administration must make sure that the created educational system does not strain lecturers or students while still

achieving the correct objectives, which are strong academic performance. For the learning process to go successfully, the university administration is also in charge of monitoring the learning system.

In conclusion, Malaysian public higher education institutions must pay more attention to the elements that influence undergraduate students' academic performance. The current state of the labor market, however, also depends on other abilities such as communication, problem-solving, and teamwork in addition to academic performance. All graduates must therefore equip themselves with all the necessary tools to enter the job market with ease.

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