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Descriptive Analysis of Students' CGPA: A Case Study of Universiti Malaysia Pahang

R. Zakaria¹, S.Z. Satari¹, N.A. Damahuri¹, R. Khairuddin¹

¹Faculty of industrial Sciences & Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Pahang, Malaysia

E-mail: roslinazairimah@ump.edu.my

Abstract. This study presents the descriptive analysis of students' performance based on the cumulative grade point average (CGPA) of the entry grade and the CGPA achieved throughout their study duration until graduation. The data analysed are students from all bachelor degree programme at Universiti Malaysia Pahang of 2011, 2012 and 2013 cohorts. Components related to academic performance such as gender, entry qualification, CGPA (entry, all semesters), academic programme and cohort are analysed using the descriptive statistics. The results show that students from Sijil Tinggi Pelajaran Malaysia (STPM) performs very well academically with mean CGPA of 3.30 throughout the study period as compared to students from diploma (CGPA:2.97), matriculation (CGPA:2.88) or Sijil Tinggi Agama Malaysia (STAM; CGPA:2.71). The findings of the study can be used by the university's administration to review intake policies and plan for the intervention program which could help improve the students' academic performance.

1. Introduction

University is expected to produce high quality of graduates whose possess all required criteria including hard skill and soft skill to fit in the workforce or able to venture as entrepreneur. Many factors affect the students' academic performance from the point of their entry at the university until the point of their graduation. The cumulative grade point average (CGPA) has been used widely to measure the students' academic performance.

Many studies have been conducted to investigate various factors that affect students' academic performance based on CGPA at university level [1-5]. The mode of study either full-time [2-4] or part-time mode [1] did affect the students' academic performance. A study on 808 evening undergraduate students from Faculty of Economics and Business Administration at Universidad Andres Bello Chile found that there is no significant relationship between academic performance and both employment and socio economic status. However, the evening students only obtained CGPA in the range of B- and C grades [1].

Demographic, motivation and learning styles are among the significant factors that affect the academic performance. A study on 170 first year students from accounting programme at Universiti Tenaga Malaysia found that there is a significant positive relationship between intrinsic and extrinsic motivations. Students with high intrinsic and extrinsic motivations will perform academically and obtain good CGPA results. Good learning styles is also proven to show significant effect on students' academic performance. The factors that did not affect the students' CGPA are gender and prior academic knowledge [3].

Similar study has been conducted on 160 students from a tertiary institute in Singapore to determine factors affected the students' academic performance including demographic (gender, age, nationality), part-time employment, extracurricular activities and interest in pursuing higher degrees. It is found that gender, nationality, involvement in extracurricular activities and intention to pursue higher studies have contributed significantly to students' academic performance [2].



In a different study, the effect of sleeping hours on students' academic performance has also been studied on 104 students of year 2 and year 3 from Biomedical Science programme of Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia. The results show that there is no significant association between good CGPA and sleeping hours, stress level and learning styles. However, the study highlights that gender has strong influence on the students' academic performance. That is, male is found to perform better academically than female students [4].

A study related to entry qualification (STPM, Matriculation, Diploma) and entry requirement have been conducted by [5] at Universiti Kebangsaan Malaysia for Faculty of Information Science and Technology students. The findings highlight that no dependency between entry CGPA and students' performance in the university. It was also observed that students with low entry CGPA are still able to obtain and graduate with higher CGPA in the university.

An extensive study regarding undergraduate students' performance conducted by [6] at University of Malaya for students from Faculty of Business and Accountancy found that the variation of CGPA obtained in the university is strongly related to knowledge prior to entering university such as economics, mathematics and accounting which are vital in maintaining good academic performance in business and accounting programmes.

In this study, factors such as gender, entry qualification, entry CGPA, academic programme and student cohorts to describe the students' academic performance are investigated. The entry qualification refers to the background of the students either they come from Diploma, Matriculation, Sijil Tinggi Pelajaran Malaysia (STPM) or Sijil Tinggi Agama Malaysia (STAM). Entry CGPA is the CGPA value when they enter Universiti Malaysia Pahang from their previous institution

2. Descriptive Statistics

The data used for this study is obtained from the Universiti Malaysia Pahang (UMP) data base. They were 1737 data which comprises of students' data from 2011, 2012 and 2013 cohorts that enrolled in UMP bachelor programme. Table 1 presents the descriptive analysis of students' background from these cohorts. Percentage of female students (53.7%) is slightly more than male students (46.3%). Most students enrolment in UMP comes from matriculation programme (67.3%) followed by STPM (19.6%), Diploma (12.6%) and the least from STAM (0.5%). It is found that 67.8% of students have entry CGPA of above 3.00 and 32.2% with entry CGPA between 2.00 and 3.00 from their previous institution.

Table 1. Descriptive statistics of UMP students from 2011, 2012 and 2013 cohorts

		Frequency	Percent
Gender	Male	805	46.3
	Female	932	53.7
Entry Qualification	STPM	340	19.6
	Matric	1169	67.3
	Diploma	219	12.6
	STAM	9	0.5
Entry CGPA	3.50 - 4.00	274	15.8
	3.00 - 3.49	903	52.0
	2.50 - 2.99	430	24.8
	2.00 - 2.49	130	7.5

The entry qualification and the entry CGPA can be classified further as shown in Table 2. The majority of the students' intake of UMP comes from matriculation with entry CGPA of min 3.00 is 43.9% followed by STPM (12.4%), Diploma (11.3%) and STAP (0.1%). Figure 1 shows the distribution of entry CGPA by gender using box plots. The median of entry CGPA for female and male is 3.17 and 3.09, respectively.

Table 2. Classification of Entry Qualification and the Entry CGPA

Entry Qualification	Entry CGPA			
	2.00-2.99	%	3.00-4.00	%
STPM	124	7.1	216	12.4
Matriculation	406	23.4	763	43.9
Diploma	22	1.3	197	11.3
STAM	8	0.5	1	0.1
Total	560	32.2	1177	67.8

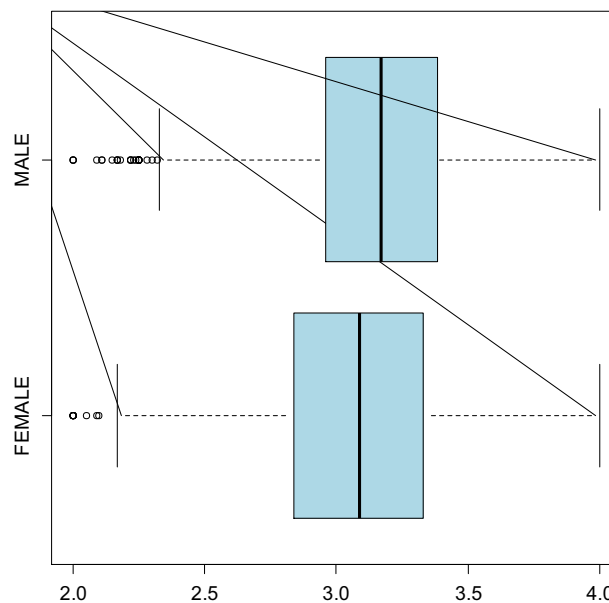


Figure 1. Comparison of entry CGPA for gender

3. Result and Discussion

In this section, the analysis of means of the entry CGPA and CGPA for every semester for students from cohort 2011, 2012 and 2013 are compared. The students' academic performance are also compared between the faculties in UMP.

Figure 2-4, compare the mean CGPA between the entry CGPA and CGPA by semester for different cohorts (2011, 2012, 2013) and from different entry qualifications (Diploma, STPM, Matriculation and STAM). Students from Diploma and Matriculation show the same trend where there is a decrease in mean of CGPA for semester 1 then the CGPA improved for the remaining semesters. However, the CGPA values are much less than the entry CGPA for both Diploma and Matriculation.

Students from STPM and STAM of cohort 2011 and 2012, show the same trend in academic performance based on CGPA, refer to Figure 2-3. Their entry CGPA are much lower than students from Diploma and Matriculation. However, the STPM and STAM students show a significant improvement of CGPA in the first semester. These findings are similar to [5] which demonstrate that student with low entry CGPA is able to obtain better CGPA at the university.

Based on Figure 2-3, it is observed that the STPM students of cohort 2011 and 2012 show a consistent academic performance with CGPA above 3.00 throughout the study. In contrast, STPM student from cohort 2013 demonstrate a different trend in the last semester of their study with much lower CGPA, refer to Figure 4. In general, it is also noted that students from Diploma, Matriculation and STAM possess the same trend after the first year of study and obtain almost similar CGPA towards the end of the study period for all cohorts.

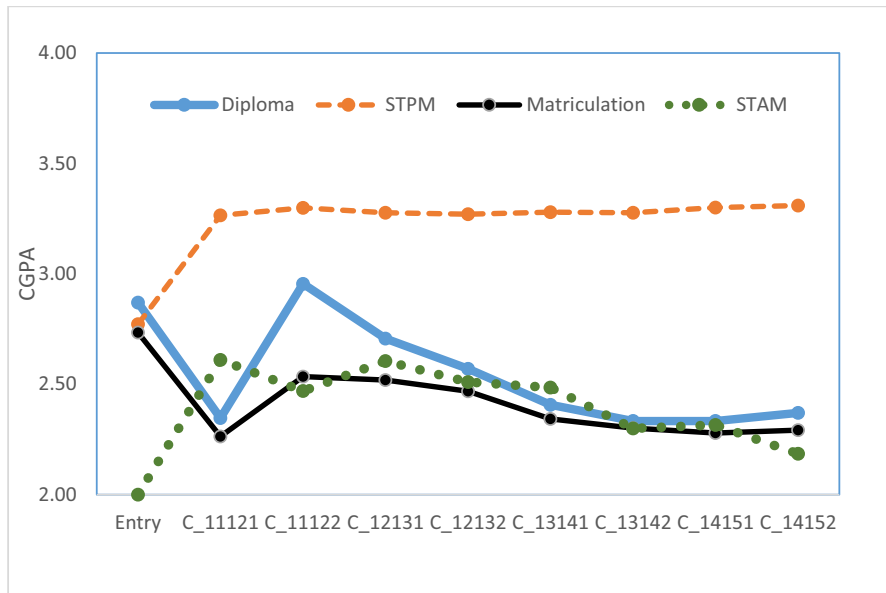


Figure 2. Cohort 2011: Mean of CGPA for entry CGPA and by semester of different entry qualifications

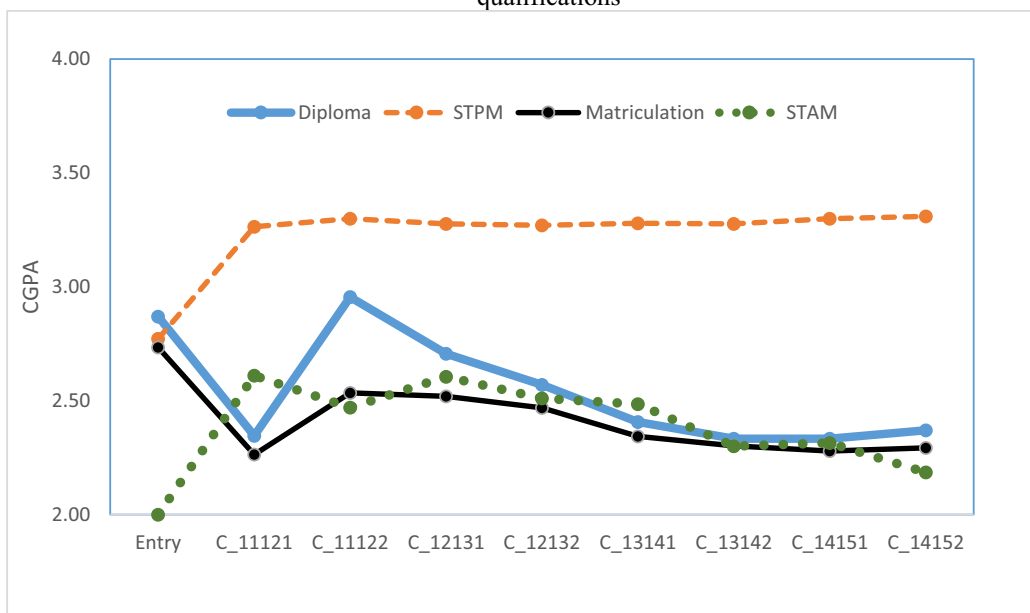


Figure 3. Cohort 2012: Mean of CGPA for entry CGPA and by semester of different entry qualifications

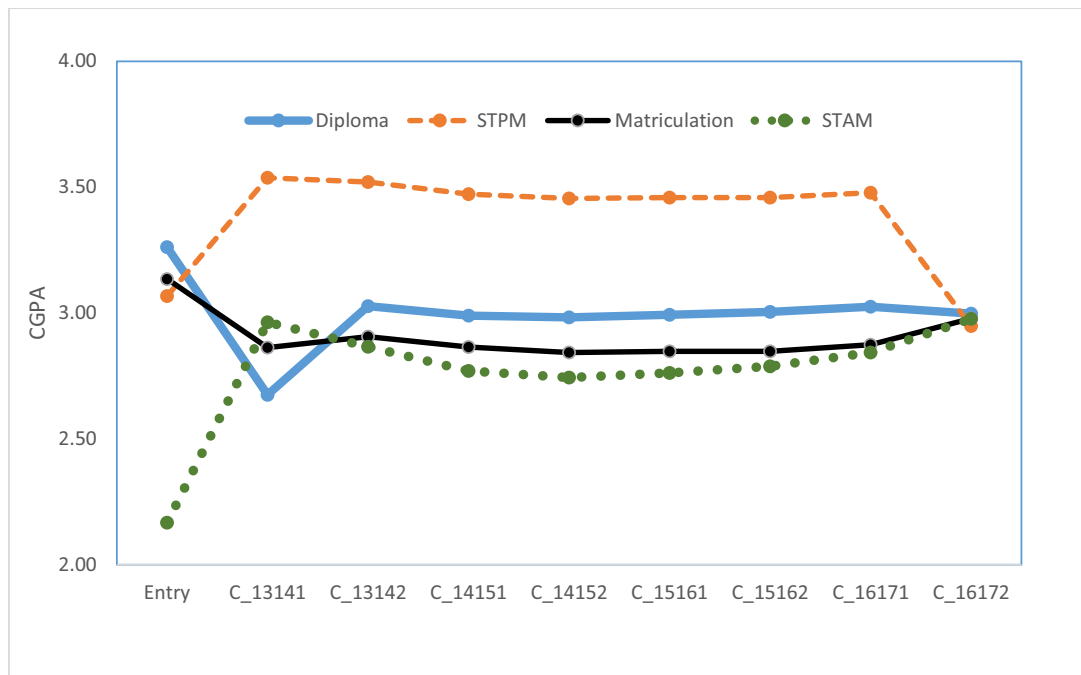


Figure 4. Cohort 2013: Mean of CGPA for entry CGPA and by semester of different entry qualifications

It is known that in matriculation and diploma systems, students are provided with tutorial classes to help strengthen their understanding in a particular subject and doing lots of drilling exercises. Hence, most students scored well during matriculation and diploma. However, at university level in particular UMP, for degree programme, the tutorial class is not available since the year 2011 when they implement open registration system for course registration. The idea is to promote and develop students who are independent and self-directed. Hence, a decrease in academic performance throughout the study period is observed for students from matriculation and diploma. Maybe, this scenario is due to adjustment period in order to fit in new system or environment. In contrast, students from STPM and STAM are in the school environment system and they seem to be able to adjust well in the university environment.

There are nine faculties in UMP, six engineering faculties from electrical, manufacturing, mechanical, chemical, civil and technology (FKEE, FKP, FKM, FKKSA, FKASA, FTK) and three non-engineering faculties from management, science & technology and computer (FPI, FSTI, FSKKP). Based on box plot in Figure 5, it is found that Fakulti Kejuruteraan Kimia dan Sumber Asli (FKKSA) has students with the highest entry CGPA value of more than 3.50, followed by Fakulti Sains & Teknologi Industri (FSTI). This is maybe due to popularity of programme offered and high cut point of entry CGPA. Four other faculties also have students with entry CGPA above 3.00. In most cases, the higher or lower entry CGPA is reflected from the entry requirements set by the respective faculties.

Figure 6 - 8 present the box plots for comparison of entry CGPA by faculty and entry qualification from STPM, Diploma, Matriculation and STAM. In general, based on entry CGPA, all the faculties can be categorised into three groups as follows: I. $2.00 < \text{CGPA} < 3.00$ II. $3.00 < \text{CGPA} < 3.5$ III. $\text{CGPA} > 3.50$. For Figure 6, based on median of entry CGPA, the faculties in category I are FTK, FKP and FKEE. Most faculties are in category II which are FKASA, FSKKP, FPI, FSTI and FKM. FKKSA is the only faculty in category III. Among all faculties, FTK has the highest variability based on its interquartile range and the entry CGPA varies from as low as 2.00 to nearly 4.00. In Figure 7, for matriculation, the faculties in category I are FSKKP, FPI, FKP and FKEE, for category II the faculties are FKASA, FTK, FSTI and FKM. Similarly, FKKSA is in category III. For diploma all nine faculties are in category II where the entry CGPA is between 3.00 and 3.50.

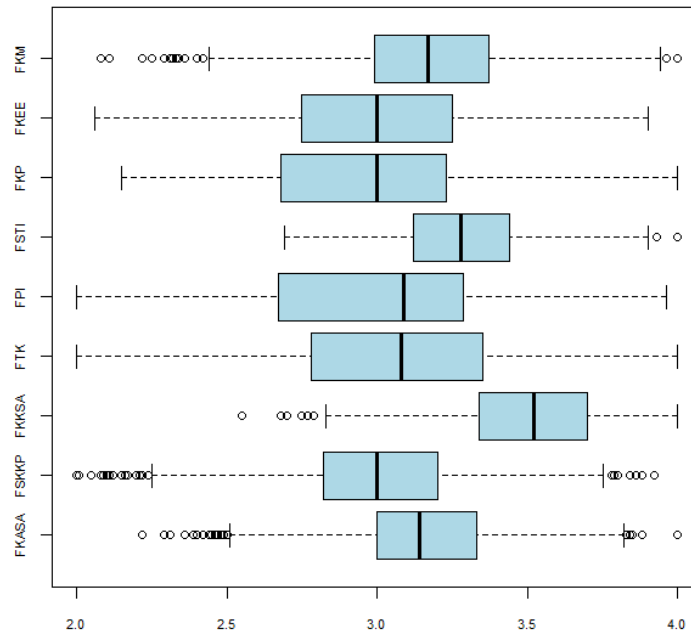


Figure 5. Comparison of entry CGPA among faculties in UMP

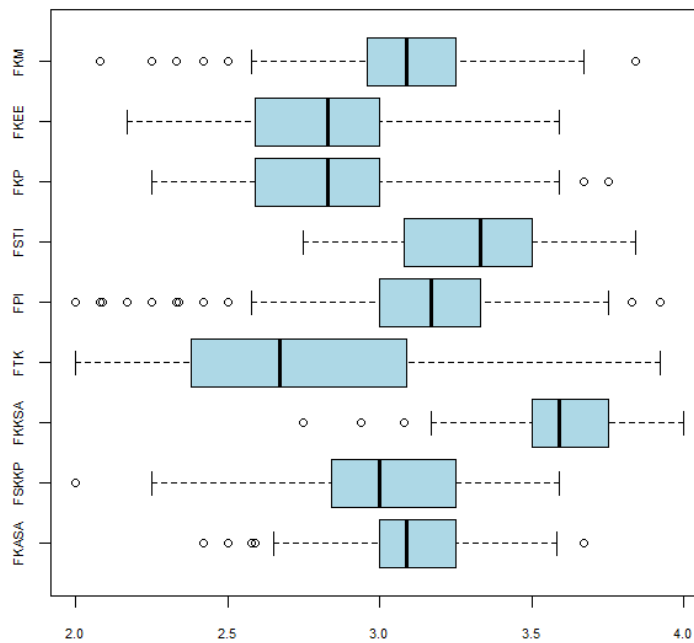


Figure 6. STPM Entry CGPA and Entry Qualification

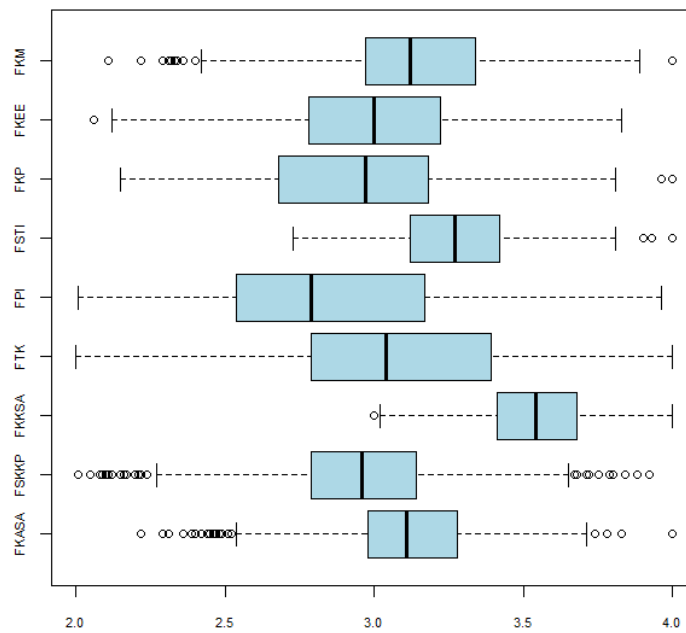


Figure 7. Matriculation Entry CGPA and Entry Qualification

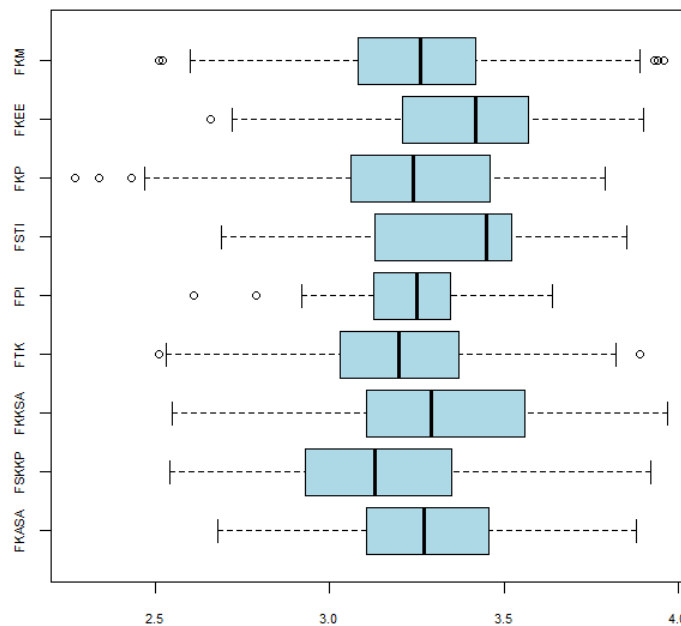


Figure 8. Diploma Entry CGPA and Entry Qualification

4. Conclusion

In this study, descriptive analysis is conducted to compare the students' academic performance based on selected factors such as entry qualification, entry CGPA, CGPA throughout the study and gender. It is found that for STPM students, the mean CGPA for each semester outperform other students from entry qualifications of STAM, Matriculation and Diploma. However, further study has to be conducted to justify this observation. There is no much difference of mean entry CGPA between genders. It is also observed that FKKSA students has entry CGPA between 3.00 and 3.50 for all entry qualifications. The findings of this study will provide some basis information on students' academic performance from different backgrounds of entry qualification in University Malaysia Pahang. The university's

administration may use the information to review intake policies and plan for the intervention program or motivation course which could help improve the students' academic performance especially students from diploma and matriculation so that they can perform better and survive throughout the study periods and also able to reduce number of drop outs. Further study using inferential statistics such as ANOVA is suggested to obtain an insight of the students' academic performance related to entry qualification and entry CGPA which are the basis requirement to enrol in degree program at a university.

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REFERENCES

- [1] Rossi M. Factors Affecting Academic Performance of University Evening Students. *Journal of Education and Human Development*. 2017; 6(1): 96-102.
- [2] Jayanthi SV, Balakrishnan S, Ching ALS, Abdul Latiff NA, Nasirudeen AMA. Factors Contributing to Academic Performance of Students in a Tertiary Institution in Singapore. *American Journal of Educational Research*. 2014; 2(9):752-758.
- [3] Mohd Remali A, Ghazali MA, Kamaruddin MK, Kee TY. Understanding Academic Performance Based on Demographic Factors, Motivation Factors and Learning Styles. *International Journal of Asian Social Science, Special Issue: International Conference on Teaching and Learning in Education*. 2013; 3(9):1938-1951.
- [4] Nihayah M, Ismarulyusda I, Syarif HL, Nur Zakiah MS, Baharudin O, Fadzil, MH. Sleeping Hours and Academic Achievements: A Study Among Biomedical Science Students. *Procedia Social and Behavioral Sciences*. 2011; 18: 617–621.
- [5] Hazilah MA, Aisyah H, Hazura M, Saidah S. and Ibrahim M. Academic Performance of Pre-Graduate Students. *International Education Studies*. 2013; 6(6): 131-136.
- [6] Ervina A, Md Nor O. Undergraduate students' performance: the case of University of Malaya. *Quality Assurance in Education*. 2005; 13(4): 329-343.