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ABSTRACT

SPSS tool is statistical analysis tool. This tool is used for analyzing the large volume of available data, extracting useful information and knowledge to support the major decision-making processes. SPSS tool can be applied in educational sector for improving the performance of students by finding the highly affected parameter on student performance. This research study is carried out by collecting the student performance parameters and its related dataset. In this research study we have collected UG students' dataset from various higher educational institute. After collection of the dataset, we have applied statistical tool SPSS to analyze the highly affected parameters on students performance.

Keywords: SPSS, Student performance, Higher education, dataset, analyze, statistical analysis

I. INTRODUCTION

The ability to identify a student's performance is very important in educational environments. Students' academic performance is based upon diverse factors like personal, social, psychological and other environmental variables. Statistical analysis is important technique to discover hidden patterns and relationships that helpful in decision making. In this tie, the objectives of the present investigation were edge so as to assist the low academic achievers in higher education and identification of different factors, which affects a student's learning behavior and performance during academic career. This paper used statistical analysis for finding highly affected parameters on student performances. Student academic performance is identified by Student Performance Index that can get by student in each and every semester of course. In the observation, it is highlighted that which parameters are highly affects on student academic performance and which are the lowery affected. This paper also produced some outcomes based on the statistical analysis. In this connection, the objectives of the present investigation were framed so as to assist the low academic achievers in higher education by Identification of different factors, which effects a student's learning behavior and performance during academic career.

II. RESEARCH BACKGROUND AND RELATED WORK

A number of reviews pertaining to not only the diverse factors like personal, socio-economic, psychological and other environmental variables that influence the performance of students but also the models that have been used for the performance prediction are available in the literature and a few specific studies are listed below for reference.

Mika^[1] suggested that insufficient skills in basic mathematics caused problems for any students who pursued in engineering. The research objectives are to identity the factors that contribute to the overall performance of students and to analyze any correlation between the abilities of students at entry point to the overall academic performance. Those factors can then be used as inputs to predict the overall performance achievement of students.

Hijazi and Naqvi^[2] conducted as study on the student performance by selecting a sample of 300 students from a group of colleges affiliated to Punjab university of Pakistan. The hypothesis that was stated as "Student's attitude towards attendance in class, hours spent in study on daily basis after college, students' family income, students'

mother's age and mother's education are significantly related with student performance" was framed. By means of simple linear regression analysis, it was found that the factors like mother's education and student's family income were highly correlated with the student academic performance.

Khan^[3] conducted a performance study on 400 students comprising 200 boys and 200 girls selected from the senior secondary school of Aligarh Muslim University, Aligarh, India with a main objective to establish the prognostic value of different measures of cognition, personality and demographic variables for success at higher secondary level in science stream. It was found that girls with high socio-economic status had relatively higher academic achievement in science stream and boys with low socio-economic status had relatively higher academic achievement in general.

Galit^[4] gave a case study that use students data to analyze their learning behavior to predict the results and to warn students at risk before their final exams.

Al-Radaideh^[5] applied a decision tree model to predict the final grade of students who studied the C++ course in Yarmouk University, Jordan in the year 2005. Three different classification methods namely ID3, C4.5, and the NaïveBayes were used. The outcome of their results indicated that Decision Tree model had better prediction than other models.

Pandey and Pal^[6] conducted study on the student performance based by selecting 60 students from a degree college of Dr. R. M. L. Awadh University, Faizabad, India. By means of association rule they find the interestingness of student in opting class teaching language.

Bray^[7], This study observed that the percentage of students receiving private tutoring in India was relatively higher than in Malaysia, Singapore, Japan, China and Sri Lanka. It was also observed that there was an enhancement of academic performance with the intensity of private tutoring and this variation of intensity of private tutoring depends on the collective factor namely socio-economic conditions.

III. DATA COLLECTION METHODOLOGY

There are various methods are used to collect the information regarding the students such as we have prepared questions in google spreadsheet and shared it among the students of various institutes. We also have prepared questionnaire in hardcopy and shared it to the students to collect the data. By using these various methodologies we have collected around 3600 student's data that covers the information like student's demographic, academic and learning behaviour.

IV. USED TOOLS AND TECHNOLOGY

We also have used SPSS statistical tool to find the most influence parameters on the student's performance enhancement among the collected parameters.

V. USED PARAMETERS IN RESEARCH

In this research we have used the following student's parameters to perform the analysis.

Table 1: Used student's parameter in research work

ATTRIBUTES	DATA TYPE	POSSIBLE VALUES
Gen	Nominal	Male, female
Percentagehsc	Nominal	Poor, average, good, very_good, excellent
Stream	Nominal	Commerce, science
F_annual_income	Nominal	Low, average, middle, high, very high
F_qualification	Categorical	No formal education, primary, ssce, 1st degree, 2nd degree, phd
F_occupation	Categorical	Unemployed, government worker, private, self employed
M_qulification	Categorical	No formal education, primary, ssce, 1st degree, 2nd degree, phd
M_occupation	Categorical	Unemployed, government worker, private, self employed
No_of_sublings	Categorical	One, two, three, four
Overall_attendance	Nominal	Poor, average, good, very_good, excellent
W_l_h	Nominal	Poor, average, good, very_good, excellent
W_li_u	Nominal	Poor, average, good, very_good, excellent
D_re_h	Nominal	Poor, average, good, very_good, excellent
E_w_l_u_h	Nominal	Poor, average, good, very_good, excellent
Internal_marks	Nominal	Poor, average, good, very_good, excellent
Assignment_marks	Nominal	Poor, average, good, very_good, excellent
Participation_extra_curriculum	Nominal	Poor, average, good, very_good, excellent
Practical_knowledge	Nominal	Poor, average, good, very_good, excellent
Theory_marks	Nominal	Poor, average, good, very_good, excellent
Internet_uses_learning	Nominal	Poor, average, good, very_good, excellent
Previous_sem_marks	Nominal	Poor, average, good, very_good, excellent
Subject Name	Nominal	Subject Name
Internal_Th_Marks	Nominal	Poor, average, good, very_good, excellent
Internal_Pr_Marks	Nominal	Poor, average, good, very_good, excellent
External_Th_Marks	Nominal	Poor, average, good, very_good, excellent
External_Pr_Marks	Nominal	Poor, average, good, very_good, excellent
Subject_Attendance	Nominal	Poor, average, good, very_good, excellent
Subject_Faculty_Performanace	Nominal	Poor, average, good, very_good, excellent
Subject Result	Nominal	Poor, average, good, very_good, excellent
Semester_wise_result	Nominal	Poor, average, good, very_good, excellent

VI. SPSS EXPERIMENTAL ANALYSIS

In the following table we have found the coefficient table after performing the statistical analysis into the SPSS tool.

Table 2: Result of SPSS Analysis

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	.237	.075		3.149	.002
	gen	-.022	.015	-.010	-1.465	.143
	Percentagehsc	-.009	.005	-.011	-1.648	.000
	Stream	.018	.016	.008	1.129	.259
	F_annual_income	-.019	.005	-.026	-3.717	.000
	FQ	.001	.005	.001	.186	.853
	FP	.005	.006	.005	.798	.425
	MQ	.012	.008	.015	1.589	.112
	MP	-.025	.014	-.017	-1.736	.083
	NOS	.095	.011	.057	8.301	.000
	Overall_attendance	.207	.010	.183	21.058	.000
	W_L_H	-.013	.005	-.018	-2.626	.004
	W_Li_U	-.007	.005	-.010	-1.412	.158
	D_Re_H	.001	.005	.002	.270	.787
	E_W_L_U_H	.008	.005	.010	1.498	.134
	INTERNAL_MARKS	.265	.009	.249	29.749	.000
	ASSIGNMENT_MARKS	-.013	.007	-.014	-1.820	.000
	PATICIPATION_EXTRA_C	.002	.008	.001	.196	.000
	URRICULAM					
	PRACTICAL_KNOWLEDGE	.167	.013	.187	12.765	.000
THEORY_MARKS	.021	.013	.022	1.592	.000	
INTERNET_USES_LEARN						
ING	-.248	.016	-.114	-15.145	.003	
PREVIOUS_SEM_MARKS	.390	.010	.422	37.925	.000	

. a. Dependent Variable: Sixth_Sem_Result

Result of above coefficient table:

A multiple regression was run to predict Sixth_sem_result from independent variables. These variables statistically significantly predicted Sixth_sem_result, $F(21, 3537) = 863.946$, $p < .0005$, So, retain to those variables whose significance level is < 0.0005 and remove those variables whose significance level is > 0.0005 from the model.

Selected highly affected parameters on student's performance after SPSS analysis:

Table 3: Highly affected parameters on student's performance

Percentage HSC	Assignment_Marks
F_Annual_Income	Practical_Knowledge
W_L_H	Theory_Marks
Overall Attendance	Internet_Uses_Learning
Internal_Marks	Previous_Semester_Marks
Participation Extra	NOS
Curriculum	

Abbreviation used in table 3:

W_L_H – Weekly Lab Hours

F_Annual_Income – Father Annual Income

NOS – No.of Siblings.

VII. CONCLUSIONS AND FUTURE SCOPE

This study was based on some selected input variables collected through questionnaire method. After analyzing different influencing factors affected on student performance through SPSS tool we obtained some useful results. As per that parameters like percentage in HSC, Father annual income, occupied time in Lab, overall attendance in all semesters, Internal marks in different subjects, participation in extracurricular activities, assignment marks, practical knowledge, theory marks, internet usage learning, previous semester marks and Number of sblings are highly affected parameters on student performance. By focusing on these getting parameters we can improve the performance of students.

Furthermore, we intent to enlarge the experiments by predicting the student performance using data mining techniques.

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