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An empirical study of socio-economic impact on academic and sports achievement of Mangalore University students

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Abstract

Performance in academics and sports by students is directly affected by the socio-economic status. Economic status of families is usually measured by the household items they possess. This study has divided the household items into three categories: Vital household items, Essential household items and Desirable household items using statistical technique. All most all the families possess vital household items but not owning essential household items which are brought as status symbol cannot have an impact on academic performance or interest in sports. It has been found that the academic performance or inculcating interest in sports by students is irrespective of their family's social status. Various statistical techniques are used to study the impact of socio-economic status on the students' performance in academics and sports.

Keywords: Socio-economic status, sports participation, academic performance, household items, factor analysis

Introduction

Socio-economics is the study of impact of economics on the social fabric of the nation. Social fabric here means 'Society' and 'Social Values'. Social economics is an alternative term used for socioeconomics. (Editor, Socioeconomic Factors, 2018) ^[4] explains about the three main factors that impact social status are employment, education, and income. When a person can afford to become a doctor and then a surgeon, then he is able to earn a large income being in that position, which will help him to maintain a good social status. He checks that his children end up getting a good employment, good income, and good societal status and so on. (Bruna Galobardes, 2006) ^[2] *et al.* have suggested different indicators of Socioeconomic Position (SEP). Academic achievement is defined differently by different researchers and scholars. NCERT defines it as "the magnitude of success in the courses mentioned in the curriculum captured by the knowledge gained through classroom teaching". Lindholm and Borsato have referred to academic achievement as the success of student in school and society measured by their skills and competencies in various aspects like communication, mathematics, science, thinking skills, etc. Few attainment measures are Cumulative Grade Point Average (CGPA), attitude of students and school drop-out rates. Eakman *et al.* (2019) have described academic achievement as the achievement in studies despite several problems a student encounters in his academic journey like non-conducive learning environment, depression, domestic stress, emotional and social lives.

Meenu Dev (2016) has studied academic achievement under psychological, emotional, social and economic situations of the student. Various factors representing these situations are considered to measure the impact on academic achievement. Factors like mental ability of the student, conducive environment at home, student's interest in academics were all considered for the study. Other factors as studied by Ab Razak (2019) are teaching-learning process, institute's infrastructure, financial stability of the student and the influence of the peer group. Students' Interest in Academics: (Els C.M. van Rooij, 2018) ^[5] *et al.* have studied University students' academic performance and the factors like self-motivation, self-efficacy in studies

and study pattern which is greatly self-regulated influence academic performance and the satisfaction level about the degree program itself. Authors have studied 243 University students. (Yarborough, 2020) [7] Have studied which factors help students to get motivated, engaged and interested in learning. They have used three frameworks to study the factors influencing the learning of students. Three frameworks are expectancy-value-cost motivation model, ARCS instructional design model and theory of self-determination. Sports among students is an important part of university learning process. There have been numerous studies to find the relation between socio-economic status and interest in sports. This study is mostly to observe the impact of socio-economic conditions on the interest of students in sports at Mangalore University. There are mainly two objectives covered in this study as shown below:

Objectives

1. To study the socio-economic impact on the academic achievement of Mangalore University sports students

2. To study the socio-economic impact on the sports achievement of Mangalore University sports students

Data analysis

Factor analysis

Initially, factor analysis is carried out to reduce the number of socio-economic variables into few factors. There were questions asked related to possession of household items like TV, refrigerator, geyser and so on. There were 17 questions related to possession of household items. Factor analysis is carried out to reduce these 17 variables into lesser number of factors.

Initially Kaiser-Meyer-Olkin (KMO) test has provided a value of 0.850 which is 'meritorious' as termed by KMO in their paper. This explains that there is high level of correlation among the variables under study. Bartlett's test of sphericity is having significant value of 0.000 which is less than 0.05 providing enough evidence that the variables can be converted into factors or in other words 'factorizable'. The results of both KMO and Bartlett's test of sphericity is provided below:

Table 1: KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy		0.850
Bartlett's test of sphericity	Approx. Chi-square	1254.213
	df	136
	Sig.	0.000

Total variance explained using eigen values and scree plot provides the information regarding the number of factors that needs to be formed.

Table 2: Total variance explained

Component	Initial eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	5.643	33.194	33.194	5.643	33.194	33.194	3.856	22.684	22.684
2	2.016	11.858	45.052	2.016	11.858	45.052	3.717	21.863	44.547
3	1.231	7.240	52.293	1.231	7.240	52.293	1.317	7.746	52.293
4	1.098	6.460	58.752						
5	.920	5.409	64.162						
6	.867	5.097	69.259						
7	.811	4.770	74.029						
8	.742	4.363	78.391						
9	.593	3.487	81.878						
10	.508	2.991	84.869						

Extraction method: Principal component analysis.

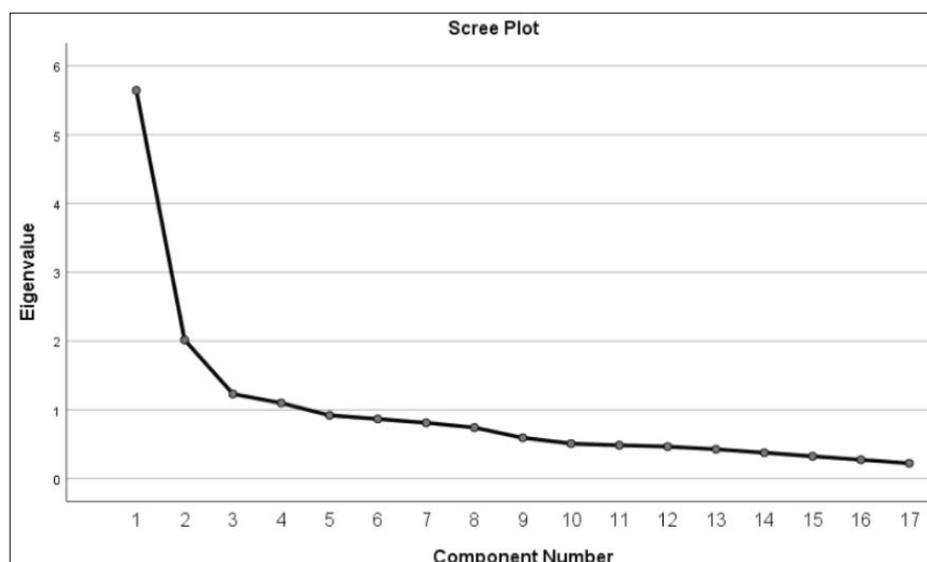


Fig 1: Scree plot

Though eigenvalues table is showing that four factors can be formed, scree plot is indicating three factors as the elbow is prominent at 3rd variable than the 4th variable. The rotated

component matrix for 4 factors is not so clear than 3 factors. This study considers forming 3 factors as shown in the rotated component matrix below:

Table 3: Rotated component matrix

	Component		
	1	2	3
Do you own a Music Player at home?	.743		
Do you own Air Cooler at home?	.688		
Do you own a Laptop?	.669		
Do you have furniture at home?	.663		
Do you own a RO Water Purifier at home?	.662		
Do you own AC at home?	.588		
Do you own a Desktop PC at home?	.452		
Own Smartphone		-.759	
Do you get daily newspaper at home?		.744	
Do you own a Washing Machine at home?		.686	
Do you own a Overhead Tank at home?		.658	
Do you own a Refrigerator at home?		.646	
Do you own a Geyser at home?		.611	
Do you own a vehicle?		.610	
Do you own a Gas Stove at home?			.752
Do you own a Mixer Grinder at home?			.697
Do you own a TV at home?			-.391

Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser Normalization

From the table above, it clear that three factors are distinguishable as vital household items, essential household items and desirable household items. VED classification of items is more suitable for this situation. Vital household items are owning gas stove, mixer grinder and a TV. These vital items are held by almost everyone. These are necessary basic items for survival. While essential items are to make our living easy. These essential items are smartphone, newspaper, washing machine, overhead tank, refrigerator, geyser, vehicles owned. While items like music player, air cooler, laptop, furniture, RO water purifier, desktop computer and AC are all desirable items, but life can run without them. So, the nomenclature of factors is as shown below:

Table 4: It clear that three factors are distinguishable as vital household items, essential household items and desirable household items

Vital items	Essential items	Desirable items
Gas Stove	Smartphone	Music player
Mixer Grinder	News paper	Air cooler
TV	Washing Machine	Laptop
	Overhead Tank	Furniture
	Refrigerator	RO water purifier
	Geyser	Desktop PC
	Vehicles owned	AC

First objective: To study the socio-economic impact on the academic achievement of Mangalore University sports students.

Hypothesis 1

H₀₁: UG degree performance is independent of possession of number of essential household items.

H_{a1}: UG degree performance is not independent of possession of number of essential household items.

Chi-square tests			
	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	9.288	12	.678

Chi-square test was conducted between the number of essential household items owned by sports students and the academic performance in their under-graduate degree. The Chi-square test output has Chi-square value of 9.288 with significance level of 0.678. Since the significance level is way too higher than alpha level of 0.05, do not reject the null hypothesis which means that performance in under-graduate degree program is independent of the possession of number of essential household items. It can be inferred that possession of these essential household items will not have great impact on the academic performance of the students.

Hypothesis 2

H₀₂: UG degree performance is independent of social status of the family.

H_{a2}: UG degree performance is not independent of social status of the family.

Chi-square tests			
	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	6.96	6	0.325

Chi-square test was conducted between the social status of sports students at Mangalore University and the academic performance in their under-graduate degree. The Chi-square test output has Chi-square value of 6.96 with significance level of 0.325. Since the significance level is way too higher than alpha level of 0.05, do not reject the null hypothesis which means that performance in under-graduate degree program is independent of the social status of the student. It can be inferred that social status will not have great impact on the academic performance of the students. Whether student is from low-income family or from high income family, the academic performance of students is spread out proportionately.

Hypothesis 3

H₀₃: Interest in sports is independent of possession of number of essential household items.

H_{a3}: Interest in sports is not independent of possession of

number of essential household items.

Chi-square tests			
	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	13.96	8	0.083

Chi-square test was conducted between the number of essential household items owned by sports students and the interest in sports. The Chi-square test output has Chi-square value of 13.96 with significance level of 0.083. Since the significance level is higher than alpha level of 0.05, do not reject the null hypothesis which means that interest in sports is independent of the possession of number of essential household items. It can be inferred that possession of these essential household items does not influence developing interest in sports. Any student can develop interest irrespective of kind of household items they possess.

Hypothesis 4

H₀₂: Interest in sports as a factor of achievement in sports is independent of social status of the family.

H_{a2}: Interest in sports as a factor of achievement in sports is not independent of social status of the family.

Chi-Square tests			
	Value	df	Asymptotic significance (2-sided)
Pearson Chi-square	3.049	4	0.55

Chi-square test was conducted between the social status of sports students at Mangalore University and the level of interest as factor of their sports achievement. The Chi-square test output has Chi-square value of 3.049 with significance level of 0.55. Since the significance level is way too higher than alpha level of 0.05, do not reject the null hypothesis which means that interest in sports is independent of the social status of the student. It can be inferred that social status will not have great impact on the interest of the students in sports. Whether student is from low-income family or from high income family, the interest in sports is spread out proportionately.

Conclusion

The analysis clearly shows that academic performance or interest in sports is not affected by possession or non-possession of essential household items. These essential items do not influence performance in academics or sports is a positive sign for the future of universities. There are various other socio-economic factors and various other academic and sports factors that can be studied to know the impact. This study is limited to find the impact of possession of essential household items on academic performance and interest in sports. This study is limited to under-graduate students only as the number of post-graduate students in this study were very less in number. There is a scope to extend similar study to post-graduate students.

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