Impact of Technology, Satisfaction, and Motivation on Academic Achievement of Undergraduate Students in Hyderabad Sindh, Pakistan

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Abstract

This study determines the impact of technology, satisfaction, and motivation on academic achievement at university level in Hyderabad, Sindh, Pakistan. This is a quantitative study, 203 respondents participated from, five Universities of Hyderabad, Sindh i.e. SZABIST, LUMHS, ISRA, SAU and Mehran-UET Jamshoro. The data collected using an adopted questionnaire and the data was analyzed using descriptive and inferential statistics. This was to find out the relationship between independent variables (technology, satisfaction, and motivation) and dependent variable (academic achievement). The results showed that there is significant relationship between predictors and response variable, whereas, the effect of variable academic achievement showed that there is weak positive relation of predictor on response variable for undergraduate students of Hyderabad region, Sindh, Pakistan. It is because mostly student gets higher level of knowledge with the provision of technology, but there are other uses of technology too, which affected their perception of use accordingly.

Keywords: Technology, Motivation, Satisfaction, Academic Achievement, Pakistan

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INTRODUCTION

As defined by (Küçüközkan, 2015) "motivation as the sum of the efforts made for mobilizing the individual towards one or more particular goals and for ensuring the continuity of this movement", which in turn substituting with the second offered but not preferred choice which derives dis-satisfaction among various level causing inferiority among relatives. On the other hand, influence of technology on the academic performance of student is debatable issue these days, whether smart-phone is adding ease to the learning for the students, internet being the source of worldwide data used as a source of information or for other means. Is the provision of working stations, large spaces for visualized learning etc. are aids to students learning conditions or are harmful? Martirosyan & Saxon (2014) analyzes the impact of satisfaction on academic performance, one of the several studies (Amro, Mundy, & Kupczynski, 2015) investigated the impact of motivation, satisfaction, and technology on academic achievement at different geographical locations and the findings of every research shows that there is positive impact of every variable on academic achievement. Satisfaction influences an individual's behavior of learning and their academic achievement. The teaching style influences the satisfaction level, (Wong & Wong (2005) shared that the level of learner's achievement is determined by the teacher's way of providing consistency in an environment that requires dedication to different needs and problems in the class; classroom environment affects individual in a way that suitable and learning environment boost the level of satisfaction, Sheridan & Kelly (2010) revealed that students valued feedback from instructors as reflected in their satisfaction and hence academic achievement. On contrary if, an individual as a student is dissatisfied then it influences its learning behavior as well as academic achievement. The dissatisfaction can

arise due to teaching ability of tutor, classroom environment being uncomfortable and unsuitable as well as student's socioeconomic environment. Previously people were used to restrict to the provided material and hence have little knowledge about the new discoveries and inventions as stated by (Edward 2009) "Technology that was once expensive and limited to only the privileged few has now advanced and become far cheaper". But with the rising trend of technology in 21st century, it is the most required necessity of an enrolled student. The daily updates about the affairs going on in the modern world, the social media being the mode of sharing information's, the new dimensions being discovered for the existing problem to be discussed. All are the concern of a student in this era, so it can be concluded that technology affects a student's academic performance. Individually these factor influence academic achievement of a student in both the ways, positively and negatively. In some studies, that are conducted in past at places like Mogadishu Somalia (Martirosyan & Saxon, 2014), New York USA (Amro, Mundy, & Kupczynski, 2015) the researcher analyzed the impact of satisfaction, motivation and technology individually on academic achievement of students, whereas another study conducted in South Texas USA analyzed the impact of all the three variable combined on academic achievement.

This study further analyze the effect of motivation, satisfaction, and technology on academic achievement of undergraduate students of Hyderabad because there are probable chances of study conducted by considering these three variables in the recent times. Satisfaction was analyzed through student response on subject content and teaching process. Motivation was determined based on taking responsibility and interest to learning material that needed later in life.

Technological impact was inferred based upon their provision, access and usage of different forms of technology in academic premises.

LITERATURE REVIEW

Academic Achievement

It incorporates all the learning outcomes expected of a student in his/her courses. Zeegers (2004) also points out that the GPA is a more generally used measure of academic success, and thus allows it to be compared with other studies where measurement of academic achievement is one of the study variables. The teachers need to become active, when they search for efficient strategies in making students think resourcefully and critically, in guiding them to work in teams, in directing them to determine and define the concepts, and in building stimulus by raising students' self-esteem through ensuring their learning success. These factors however are required to be considered by the teachers on a permanent basis (Iacob, & Musuroi, 2013).

Many studies have proved that a knowledgeable and skillful teacher can create student achievement. According to Gordon Cawelti (2004), student achievement could be improved through positive behavioral reinforcement, goals and modeling was the intent of the study. Academic achievement has been approached with several ways. In academic improvement, teacher quality, class size and financial support were critical issues at educational organization. This simply means that students who are using technology in their academic lives, they have gained more grades than those who are not using technology, does technology really help students get a more academic achievement or not? Students who are satisfied with themselves getting more academic achievement than those who are dissatisfied, considering those students who are inspired from someone or motivated by themselves are getting more grades, others are not.

Technology is reputed to offer rich pedagogical opportunities to transform student learning, by improving student engagement (Carle, Jaffee, & Miller, 2009). (Elliott and Healy, 2001) defined student satisfaction as a "short-term attitude resulting from an evaluation of a student's educational experience. Turner (1995) considers motivation synonymous with cognitive engagement, which he defines as "voluntary uses of high-level self-regulated learning strategies, such as paying attention, connection, planning, and monitoring".

Technology and Academic Achievement

Instructors utilize online networks, electronic announcement sheets, exercise plan banks to remain associated with the bigger instructive network outside their classroom. Electronic gatherings advance intelligent deduction for preservice science instructors in student teaching placements (Bodzin and Park 2002). "Teleconferencing technologies offer the opportunity for teachers and students in remote locations to have two-way audio and video communications" (Maring et al. 2003). "It is also important to address the needs of all students in these classrooms. Technology supports the need for different approaches to learning, helping to create a sense of community and meaningful experience" Future lab. (2009). "When elementary school teachers use and model different forms of technologies, they actively engage their students and create a stimulating work environment" (Kenney, 2011).

In 1995, a study of 101 eighth-grade students in Turkey on the use of computer-aided instruction in chemistry classrooms followed a pre- and posttest control group design. The authors found that students using the computer-aided instructional program on the mole concept and chemical formulas showed significantly higher scores than the control group recitation sections (Yalçınalp et al. 1995). Therefore, hypothesis can be developed as,

H1: Technology has a positive significant impact on academic achievement.

Students Satisfaction and Academic Achievement

The main objective of this study is to find the factors affecting student performance in postsecondary level in Western educational systems. Many Researchers have proposed that student satisfaction reinforce their intention to stay in college which supports student retention (Keaveney & Young, 1997). Many studies have focused on reviewing factors that affect student academic performance in higher education (Graunke & Woosley, 2005; Saenz, Marcoulides, Junn, & Young, 1999; Valentine, 2003). In (Saenz et al., 1999) inspected the relationship between college experience and academic performance among minority students in American higher education. Academic performance was measured by students' GPAs and college experience was measured by different variables involving friendships with students of diverse backgrounds, discussion with professors about subject, self-learning, involvement in campus life and attendance of campus events, use of library, etcetera. The researcher defined a satisfaction index combining six satisfaction related questions to examine the effects on student retention and academic performance. (Valentine, 2003).

A self-report questionnaire was used to collect data. Number of responders were 372 students randomly selected from public and private universities located in rural and urban areas of Armenia. Data were analyzed by the SPSS software. Armenian students who reported better satisfaction with their overall college experience had higher grade point averages than those with low satisfaction. Graduates' quality can become questionable if their academic performance is low. This can show negatively affect the institution's reputation, and create challenges to graduates as they enter the labor force. Besides, as noted Armenian education administrators have been slow to incorporate the students' perspective into their leadership strategies. Armenian higher educational institutions begin measuring student satisfaction in some form. This may utilize systematic feedback from students on services and programs offered, with the goal of improving student educational outcomes. Therefore, this study develops the following hypothesis,

H2: Satisfaction has a positive significant impact on academic achievement.

Student Motivation and Academic Achievement

The researcher examined the impact of motivation on student's academic achievement of university Sultan Zainul. In this study he proposed a relationship between motivation on academic achievement particularly GPA. Wigfield and Eccles (2007) assume that motivation is a three dimensional construct. For them, researchers believe that motivation for learners indulging in any learning activity has to consider these basic provoking questions: "Am I able to perform such task?", "Is it necessary to perform this task and why?", "What are the necessities to perform this task to get succeeded?"

Fontana (1981) suggested that, in the circumstances of inadequate motivation to study, the results of that study will be insufficient. The examination is based upon structured questionnaire having two part demographic and second completely based upon motivation and main objective of study. The data is analyzed through independent t-test and simple linear regression the main objective of study is to determine relationship between motivation and academic achievement and effect of motivation on academic achievement. The result shows the there is strong co-relation between motivation and academic achievement and effect of motivation on academic achievement as indicated by regression is positive that it is good predictor of student's performance.

Therefore, this study develops the hypothesis,

H3. Motivation has a positive significant impact on academic achievement.

Fig 1. Research Model

RESEARCH METHODOLOGY

This is an explanatory study; the respondents were students of undergraduate program of five different university of Hyderabad (SZABIST, SAU, ISRA, LUMHS and MUET). The population was unknown due to unavailability of the total number of enrolled student in every university. Therefore, non-probability sampling technique (purposive) used to select students. A questionnaire developed on Google docs and shared on social media platform to get the selective responses from students. The survey instrument on motivation was adapted from a 31question survey (MSLQ), questions on self-efficacy and motivation were adapted from (Pintrich, Smith, Garcia, & McKeachine, 1991). The questions on technology were adapted from the Computer Knowledge Survey (Vural, 2010), and questions on satisfaction were adapted from (Kupczynski, 2006). Reliability is the extent to which a test or procedure of data collection yields similar results under constant conditions on all occasions (Amin, 2005). The reliability of technology scale was 0.739, reliability of the satisfaction scale was 0.890, and the reliability of motivation scale was 0.817. The reliability of all scales in this study is 0.882.

RESULTS AND ANALYSIS

Descriptive statistics

The descriptive statistics of age shows the variation of 203 respondents ranging 18-30 years. The frequency of age 18-20 years is 59 respondents, which is 29% of total sample. Majority respondents are of age 21-23 years with the frequency of 109 respondents, which is 54% of total sample. 27 respondents are of age 24-26 years, which is 13% of total sample and 8 respondents, are of age 27-30 years which is 4% of total sample.

The targeted university for the examination was SZABIST (1), MUET (2), ISRA (3), LUMHS (4), and SAU (5). The respondent from the SZABIST Hyderabad are 77 from 203 which is 37.9% of total sample. The respondent from the MUET Hyderabad are 56 from 203, which is 27.6% of total sample. The respondent from the ISRA Hyderabad are 18 from 203, which 8.9% of total sample. The respondent from the LUMHS Hyderabad are 17 from 203, which is 8.4% of total sample. The respondent from the SAU Hyderabad are 35 from 203, which is 17.2% of total sample. The male respondents were 118 among 203, which are 58.1% of total sample, and the female respondents were 85 among 203, which are 41.9% of total sample.

The respondents of the study were the undergraduate students of Hyderabad of the four academic years, while, in case of medical five academic years. The frequency of first year student was 15 respondents, which is 7.4% of total sample. The frequency of second year student was 43 respondents, which is 21.2% of total sample. The frequency of third year student was 62 respondents, which is 30.5% of total sample. The frequency of fourth year student was 66 respondents, which is 32.5% of total sample. The frequency of fifth year student was 17 respondents, which is 8.4% of total sample. The 138 out of 203 responses opted projector as the form of technology used in classroom, which is 68% of total population. The 21 out of 203 responses opted calculators as the form of technology used in classroom, which is 10.3% of total population. The 34 out of 203 responses opted projector as the form of laptop used in classroom, which is 16.7% of total population. The 10 out of 203 responses opted

projector as the form of cellphones used in classroom, which is 4.9% of total population.

Table 1 shows the Pearson correlation value of 0.462 at significant level $p < 0.05$, shows that the technology and academic achievement have weak positive relation. The Pearson correlation value of 0.475 at significant level of $p < 0.05$, shows that the motivation and academic achievement have weak positive relation with each other which justify the research objective, and acceptance of hypothesis. The Pearson correlation value of 0.475 at significant level $p < 0.05$, shows that the satisfaction and academic achievement have weak positive relation with each other which justify the research objective and acceptance of hypothesis.

Table 1. Correlations Analysis

	Satisfacti on	Motivati on	Technol ogy	Academic Achievement
Satisfaction	1			
Motivation	.716 **	1		
Technology	.680 **	.695 **	1	
Academic Achievement	.475 **	.475 **	.462 **	1

**Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows that the R. square of predictor (technology, satisfaction, motivation) and the response (academic achievement) is 0.278 or 27.8% and the adjusted R. square is 0.267 or 26.7% at the significance level of 0.05 or 95%.

Table 2. Model Summary

R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Change Statistics	R-Change	F-Change	df1	df2	Sig. F Change
.527 ^a	.278	.267	.57732	.278	25.521	3	199	.000	

a. Predictors: (Constant), Technology, Satisfaction, Motivation

Table 3 shows the statistical analysis of coefficient of variables. The unstandardized beta tell that a one unit change in independent variable bring the times of change in dependent variable, and standardized beta tells that a one unit of change brought in response variable brings the times of change in predictor variable. In the above table, the model identifies the predictor variables and their multiplier effect with dependent variables.

Table 3. Analysis of coefficient of variables

Unstandardized Coefficients	B	Std. Error	Standardized Coefficients	t	Sig.
Model 1					
(Constant)	1.819	.192		9.49	.000
Satisfaction	.154	.068	.208	2.25	.026
Motivation	.150	.071	.199	2.11	.036
Technology	.145	.071	.182	2.02	.044

a. Dependent Variable: Academic Achievement

The standardized beta of satisfaction with the value of 0.208 concludes that with one percent change in satisfaction level brings a 20.8% change in academic achievement of an undergraduate student. The standardized beta of motivation with the value of 0.199 concludes that one percent change in motivation level bring a 19.9% change in academic achievement of an undergraduate student. The standardized beta of technology with the value of 0.182 concludes that with one percent change in technology level brings 18.2% change in academic achievement of an undergraduate student.

The p-value of multiple regressions is significant at the level below 0.05. The p-value of the three independent variable: satisfaction (0.026), motivation (0.036), and technology (0.044) shows that all three hypotheses are accepted. Thus, satisfaction has significant positive relation with academic achievement, motivation has significant positive relation with academic achievement, and the

technology has significant positive relations with academic achievement.

CONCLUSION

The impact of technology as connoted by multiple regression is positive but is not as significant and it is supported by (Shapley, Sheehan, Maloney, and Caranikas-Walker (2011) "technology produced a general trend towards academic improvement, but this increase was not significant, as it should be because of the variability of its use. The provision, and allowing the use of technology specifically work station at academic's premises can draw two way responses, the first that it can be used efficiently as a mean of information, providing ease in the workload, and a channel to get access to worldwide things going, and the second way that it can be misused, like using it as a mean of entertainment rather than information provided at academic premises.

The impact of satisfaction as shown by multiple regression with the value of 0.026 is positive on academic achievement which concludes that the chosen respondents are influenced with the instructor provide suitable and efficient way of communicating content and the result shows students of chosen university feel satisfied with the instructor's way of teaching and their way of assessment, which boost morale and provide satisfaction with their achievement.

The impact of motivation as connoted by multiple regression is significantly positive and the value of correlation determined that the strength of positive relation is weak which concludes that the chosen respondents are influenced by the factor that impact their level of motivation as found by (Williams et al. 2007) the autonomous motivation is positively associated with the use of a good study strategy by the students which is positively associated with higher study effort and better GPA. Miller (1997) states that, "...schools and teachers can encourage or discourage...learning through the ways in which they structure the learning environment." Besides the outcome percentage of 72.8% extracted from questionnaire responses related to "Your previous semester GPA motivates you to achieve more?" shows that students get motivated when achieve good GPA and put more efforts to achieve more.

The conclusion is made in line with the study objective supported by the analyzed data. This study included impact of technology, motivation and technology with academic achievement on undergraduate student at Hyderabad, Sindh Pakistan. The finding of the study revealed that there is weak positive relation of the independent variable (technology, satisfaction and technology) on dependent variable (academic achievement) as determined by the GPA achieved by the student in their last attempted semester. It is because mostly student gets higher level of knowledge with the provision of technology, but there are other uses of technology too, which affected their perception of use accordingly. The satisfaction level of student is achieved when instructor provide suitable and efficient way of communicating content and the result shows students of chosen university feel satisfied with the instructor's way of teaching and their way of assessment, which boost morale and provide satisfaction with their achievement. The student of Hyderabad feels motivated while they fulfill the merit requirement of course, and the working environment of the course, which boosts their level confidence and makes them feel happy and get motivated to achieve more.

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