



# IMPACT OF TECHNOLOGICAL CHANGE ON ACADEMIC PERFORMANCE WITH THE MEDIATING ROLE OF STUDENT'S ENGAGEMENT: REASSESSING KURT LEWIN MODEL IN PUBLIC AND PRIVATE HIGHER EDUCATION INSTITUTES OF SINDH PROVINCE, PAKISTAN

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## ABSTRACT

*Technology has become ever more interwoven into the fabric of academic life. With the interventions of technological innovations, Higher Education Institutes (HEIs) of the world are transforming their ways of disseminating knowledge, in every classroom setup, the inclusion of technological facilities includes Internet in classrooms, multimedia, affordable digital devices, installation of e portal LMS (Learning Management System) for sharing the learning content which generates students' engagement. Students' engagement in academic system is considered as a major factor to assess the behavioral wise involvement of students for learning and achieving academic performance. In present study, quantitative research method has been utilized and data was collected from the sample size of 798 students from public and private sector Higher Education Institute of Sindh Province. The study intended to examine the hypotheses involving direct and indirect relationship between variables which are being developed based on Kurt Lewin Model and Social Exchange Theory. The study investigated that*



*technological change has a positive and significant impact on the students engagement which exhibited the acceptance of H1, subsequently, the relationship between students' engagement and academic performance carries strong and significant impact which also exhibits the acceptance of H2, lastly the indirect relationship of the variables explained that student's engagement mediates the relationship positively and significantly between technological change and academic performance of the student of higher Education Institutes of Sindh Province, thus indicating the acceptance of H3. So, it is concluded that Technological change has a positive and significant impact on the academic performance of the student with the mediating role of student's engagement.*

**KEYWORDS:** Technological Change, Students' Engagement, Academic Performance.

## **INTRODUCTION**

Since the first creature got life, from that period till today, the world is changing at an immense pace. All the worldly processes are getting changed day by day. Sectors where human resource is of utmost need, no matter be it Engineering, Medical, Political, Socio-Political or Business, every field requires timely and speedy change. There is no any day, without a breakthrough invention in the scientific world or business world (Spears et al., 2022).

To explore the recorded history, change will be regarded as one of the few constants. In terms of Socio-Economic Development, Higher Education Institutes with upgraded technology and other facilities are of major concern and have significant importance. The emergence and presence of technology in society are considered to be a heightening factor in Socio-Economic Development (Hanafizadeh et al., 2013). Technology has become ever more interwoven into the fabric of academic life. With the interventions of Technological Innovations, Higher Education Institutes (HEIs) are changing the way of disseminating knowledge, consequently those Higher Education Institutes that are not coping up with the changing scenario, are lagging behind in terms of stakeholder satisfaction (Teimoornia et al., 2011).

Students' engagement in their academic setup is considered as a major factor to assess the behavioral wise involvement of students. In Higher Education Institutes, students' engagement will provide an assessment that how well the academic institute is implementing policies and procedures and fulfilling the responsibilities of education providers. Students' engagement is a three folded concept in any higher education institute, which includes, how students behave, get emotionally attached to the academic institutes and how their cognition works (Delfino, 2019) (Avcı & Ergün, 2022).



The constructive academic engagement generates a sense of ownership, connectivity and an opportunity to become an ambassadors of their educational institutes (Delfino, 2019). The timely and energetic efforts which students devote inside and outside the classroom is the best indicator of their keen learning. Students' engagement has been further classified into three other criterions or perspectives, one is utmost level of mental capability while studying, second is the perception of being significant, eagerness and being inventive to learn and third is the state where student is utterly determined and absorbed into the academic pattern offered by the educational institute. (González et al. 2020).

Students at the time of entering into academia, possesses a strong sense of academic performance (Okpa et al., 2022) which leads to achieving one of the mainstream academic goals (Rudhumbu, 2022). It is one of the leading motives of Higher Education Institutes to set strong and productive grounds for the students to attain high academic excellence (Lian et al., 2022). Academic performance can be considered as the center point of gravity, around which all the significant elements of education revolves and that is why many researchers and other stakeholders found their keen interest to investigate academic performance of students enrolled in Higher Education Institutes (mohamed, 2022). For securing better positioned jobs at a top-notch organization, a healthier career and quality life after graduation and post-graduation, it is the academic performance which is the prerequisite for all. It is noteworthy to mention that the success and failure of the Higher Education Institute is immensely dependent upon the academic outcome of the students. The more the students perform better in academics, the more the prospective potentials HEI's will produce that ultimately will shape a fine chunk of human capital contributing for the development of society and economy of the nation (Bharata & Widyaningrum, 2021).

Academic performance leads to the development of students in terms of academics and intellect (Nazir, 2021). Students gain higher grades and scores in exams, quiz, projects and assignments refer to their academic performance (Sahu et al., 2022) (Kamara & Dadhabai, 2022) (Mahboub, 2022). Performance of the students also depends upon two features; personal and environment (Meyer et al., 2022). It is a phenomenon where acquired knowledge and education opens up countless opportunities for the students to advance themselves, to become ambitious, to have progressive and satisfied career (Garİpağaoğlu, 2022)

The Pakistan Higher Education Commission Vision of 2025 envisioned seven supporting pillars or priorities, out of which one mentions the planning of Information Communication Technologies and other tech-oriented facilities for education 2017-2025 (Taylor, 2017) so there seems the research gap of Technological facilities being provided in the Higher Education Sector of Pakistan that has the tendency to positively affect the Academic Performance of the student's. Therefore, present study treated the research gap by adding technological change as independent variable in the research model. Furthermore, in Higher Education Institutes, the impact of technological change on teachers and faculty has always been a focus of researchers and practitioners which



includes (Teacher's attitude, working experience, self-efficacy, interest and etc) Haris, (2022), on the contrary, literature has hardly been observed that can analyze the impact of Technological facilities on the students of Higher Education Institute. Consequently, present study fills the gaps by collecting data on students of Higher Education Institutes to analyze the impact on their Academic Performances.

The purpose of the present research is to study the relationship of Technological Change and Academic Performance with the mediating role of student's engagement in Higher Education Institutes of Sindh Province.

## **HYPOTHESES DEVELOPMENT**

### **Technological Change (TC) and Students' Engagement (ENG)**

Rashid & Asghar (2016) investigated the correlation between Technological usage and students' engagement. The research was conducted on the sample size of 761 female undergraduate students from Saudia Arab based Private Sector university. The data was collected through an online survey method, data was analyzed by using Path Analysis which tested the model with the variable's technological usage and student engagement. The results and the conclusion discovered the use of technology in Higher Education Institutes carry positive and direct relationship with students' engagement.

Schindler et al., (2017) conducted research following the secondary data collection method, researchers collected that data from prominent literature from the past 5 years indicating the influence of computer-based technology on the student's engagement. The findings and the conclusion of the research work indicated digital games in an academic setup influences the academic involvement of the students in terms of behaviors, emotions and cognition, followed by web conferencing and the usage of social media applications for academic purpose.

*H1: Technological Change has a positive and significant effect on student's engagement in Higher Education Institutes of Sindh Province*

### **Students Engagement (ENG) and Academic Performance (AP)**

Sukor et al., (2021) conducted research on the correlated variables of academic engagement and academic performance. The study was conducted using correlation design of the research, through random sampling method with the sample size of total 84 undergraduate students. Data collected was done with the help of adapted questionnaire, which consisted upon 3 proportions of student's engagement (emotional, cognitive and behavioral). The results and the findings of the study showed that emotional and cognitive engagement have strong and positive relationship with



academic performance, while negative impact was being witnessed between behavioral engagement and academic performance.

Kuzminykh et al., (2021) examined the affiliation between academic engagement and academic performance of the students' who take active part in an online program as a substitute of higher education programs, The data was collected via secondary data collection method (eLearning sources - Moodle database, posted experiences at different forums, completed tasks, comments on recorded webinars, etc), the analysis of the data revealed that there is a strong and positive correlation between students engagement and academic performance.

Delfino, (2019) researched the extent of student's engagement which possess ultimate impact on the academic performance of the student's, purposive sampling method has been used with 305 students from public sector university of Philippines. Survey method was used for data collection. SPSS software was incorporated in which correlation and multiple regression tool was applied for data analysis. The conclusion of the analyzed data revealed that the more the students are engaged in terms of emotion, cognitions and behaviorally, the more they get best academic performances and achievements.

*H2: Students engagement has a positive and significant effect on student's academic performance in Higher Education Institutes of Sindh Province.*

### **Students Engagement (ENG) As a Mediator Between Technological Change (TC) and Academic Performance (AP)**

From numerous studies its has been witnessed that the mediating variable students engagement has not played a role in between technological change and academic performance, whereas the variable students engagement carries the characteristics to act as a mediator, as Jelas et al. (2016) examined the relationship of students engagement between learning support and academic achievement among Malaysians adolescents, another researcher Tomaszek, (2020) conducted a research by using a variable student engagement as a mediator between student alienation and school burnout.

Al-Abdullatif & Gameil, (2021) conducted research that contributes on students' part, how digital technology integrates (in terms of usefulness, ease and attitude) with learning engagement and enhances students' academic performance. The sample of the study comprised of 185 undergraduate students, data was collected with the questionnaires and analyzed via structural equation model. The findings of the study recommended that digital technological environment and students engagement carries positive and strong effect on academic performance.



Wekerle et al. (2022) conducted research with the aim of determining, technological change carries an impact on the student's engagement which eventually gets associated with higher academic performance and learning outcomes. The study was steered with the sample size of 381 students from Higher Education Sector of Germany. Grangers causality Wald Test (Koengkan et al., 2019) has been used to analyses the relationship between variables. Results revealed that when educational technology is being implemented in classroom setup, students feel more stimulated in engaging themselves and even more constructively and passively, which eventually leads to positively linked with academic performance.

Moubayed et al., (2018) directed experimental research by using rule-based machine learning algorithm to discover the association between eLearning environment, students' engagement and performance. The results of the apriori algorithm discovered that there is a positive and strong correlation exist between the engagement of students and their academic performance in a tech-oriented environment.

*H3: Students engagement mediates the relationship positively and significantly between technological change and academic performance in Higher Education Institutes of Sindh Province.*

### PRESENT STUDY CONCEPTUAL FRAMEWORK

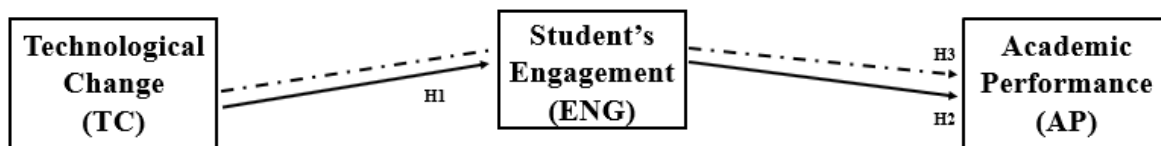


Figure 1: Conceptual Framework

## METHODOLOGY

### Research Approach and Strategy

Present study follows the deductive approach with the aim to test the hypotheses involving direct and indirect relationship between variables which are being developed based on Kurt Lewin Model and Social Exchange Theory. The online Survey method has been used as a research strategy, to collect data, web-based questionnaire were used that enabled the collection of large-scale data effectively and conveniently.

### Population and Sampling



The population for the present study includes students from 12 Public and Private Higher Education Institute of Sindh Province. Present study has used convenience-based sampling techniques with the Sample size of 798 students.

### **Measures**

The scale for the Technological Change has been adapted from the study of (Gurtoo & Tripathy, 2000) with 25 items, scale for the Students engagement has been adapted from the study of (Doğan, 2014) with 12 items and scale for the Academic Performance has been adapted from the study of Keller (2012) with 5 items. Data was collected using 5 Point Likert Scale where 1 represent Strongly Disagree to 5 represents Strongly Agree.

### **Demographic Details**

The demographic factors surveyed in present research are Gender, Age and Sector. In the present study, 56.1% males and 43.9% females have participated, under the demographic variable of age; 85% respondents were from the age bracket of 18-23, 13% respondents were from 24 - 29, 1.1% respondents were from 30 - 35, 0.9% respondents from 36 - 40, 0.4% participants were from the age category above 40, under the demographic variable of Sector; 54.9% respondents were from Public Sector and 45.1% respondents were from Private Sector.

### **DATA ANALYSIS**

For examining and testing of present study model, Smart PLS software is employed. Anderson and Gerbing (1988) suggested to test the model development with two step method, therefore present study tested the development of model first with Measurement Model (Indicator Reliability and Internal Consistency Reliability, Convergent Validity and Discriminant Validity) (Hair et al., 2013) and later with Structural Model.

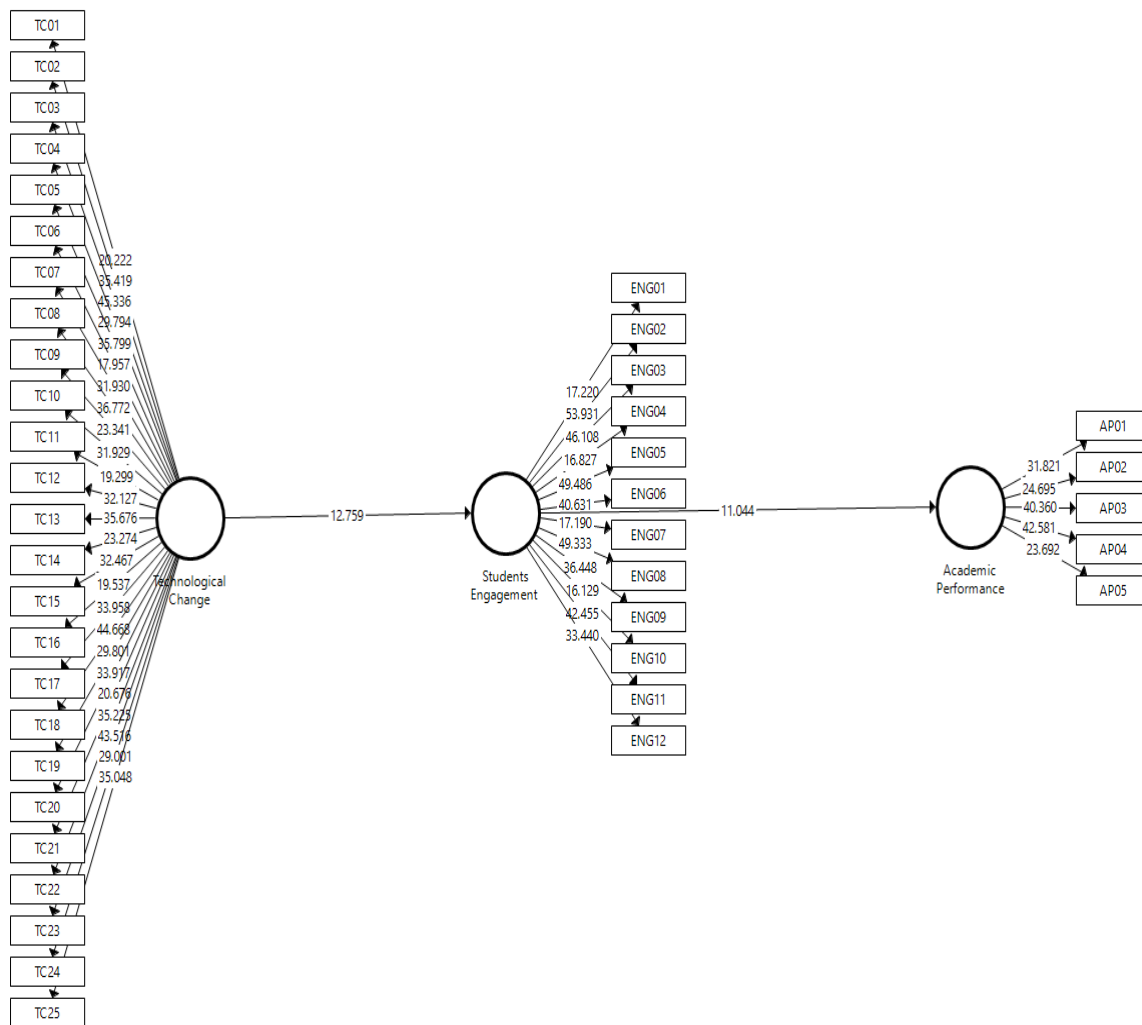
#### **Measurement (Outer Model) Analysis**

The table 1 of the present study indicates that, the values of the item's outer loadings (Bivariate Correlation) are greater than 0.50. showing the establishment of the indicator reliability. Further, the values of composite reliability for all constructs are greater than the recommended value of 0.7 (demonstrating in the table 1) which indicated the establishment of the internal consistency reliability.

For assessing convergent validity, average variance extracted (AVE) values for all constructs are greater than 0.5, demonstrating the establishment of the convergent validity. For measuring



discriminant validity, in Table 2, all the HTMT values are less than 0.85, therefore it explains that respondents identified all the three constructs are different.



**Figure 2: SMART PLS – Measurement Model Representation**



**Table 1: Measurement Model Analysis**

<b>Construct</b>	<b>Items</b>	<b>Outer Loadings</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
<b>Technological Change</b>	TC1	0.712	<b>0.970</b>	<b>0.566</b>
	TC2	0.780		
	TC3	0.816		
	TC4	0.742		
	TC5	0.769		
	TC6	0.683		
	TC7	0.759		
	TC8	0.782		
	TC9	0.701		
	TC10	0.748		
	TC11	0.690		
	TC12	0.767		
	TC13	0.784		
	TC14	0.709		
	TC15	0.755		
	TC16	0.703		
	TC17	0.768		
	TC18	0.809		
	TC19	0.744		
	TC20	0.757		
	TC21	0.719		
	TC22	0.771		
	TC23	0.812		
	TC24	0.738		
	TC25	0.762		
<b>Students Engagement</b>	ENG1	0.691	<b>0.952</b>	<b>0.623</b>
	ENG2	0.865		
	ENG3	0.854		
	ENG4	0.676		
	ENG5	0.851		
	ENG6	0.831		
	ENG7	0.678		
	ENG8	0.847		
	ENG9	0.821		



	ENG10	0.657		
	ENG11	0.839		
	ENG 12	0.816		
<b>Academic Performance</b>	AP1	0.785	<b>0.656</b>	<b>0.868</b>
	AP2	0.757		
	AP3	0.869		
	AP4	0.872		
	AP5	0.760		

**Table 2: Discriminant Validity (HTMT)**

<b>Constructs</b>	<b>AP</b>	<b>ENG</b>	<b>TC</b>
Academic Performance			
Students Engagement	0.490		
Technological Change	0.495	0.496	

### **Structural (Inner Model) Analysis**

In present study the Structural Model Analysis is calculated through bootstrapping method with 5000 resamples (Hair, Hult, et al., 2017) using Bias-Corrected and Accelerated (BCa) Bootstrap with one tailed test where significance level is 0.05. Traditionally, to test the hypothesis Beta, T value and P value used to be calculated, later on Hahn and Ang (2017) suggested usage of the other criterions along with the p-value i.e. confidence intervals and effect sizes in order to accurately test the hypothesis. So following the suggestion of Hahn and Ang (2017) present study tested the significance of the hypothesis using combination of criterions i.e. p-values, confidence intervals and effect sizes.



**Table 3: Hypotheses Testing**

Hypotheses Correspondence	Beta ( $\beta$ )	Std Error	T	P	LCI	UCI	Hypothesis	F <sup>2</sup>
H1 TC→ENG	0.49 7	0.03 9	12.94 5	0.00 0	0.41 7	0.56 6	<b>Accepted</b>	0.32 7
H2 ENG→AP	0.46 8	0.04 2	10.93 2	0.00 0	0.37 9	0.54 6	<b>Accepted</b>	0.28 0
H3 TC→ENG→AP	0.23 2	0.03 2	7.460	0.00 0	0.17 8	0.29 4	<b>Accepted</b>	-

Results for Hypotheses 1, 2 and 3 indicates  $\beta$  values (0.497, 0.468, 0.232) (Hair et al., 2014), T values (12.945, 10.932, 7.460) (Hair et al., 2017), significance level P values (0.000 for each hypothesis) (Hair et al., 2006), confidence interval (0.417-0.566, 0.379-0.546, 0.178-0.294) (Preacher and Hayes, 2008), respectively indicating the acceptance of H1, H2, H3, furthermore the analysis shows H1 holds large effect size and H2 holds Medium effect size (F<sup>2</sup>).

In assessing R<sup>2</sup>, present study model explains 24.6% of total variance in students' engagement (ENG) and 21.6% in Academic Performance which exhibited weak level of R-Square.

For the assessment of Predictive Relevance, Q<sup>2</sup> is calculated through Blindfolding Technique. Blindfolding reuse in-sample data matrix by omitting a part, which calculates the Stone-Geisser's Q<sup>2</sup> value (Geisser, 1975; Stone, 1974) representing criteria to evaluate cross-validated predictive relevance of the model. This procedure is employed in present study by using the omission distance 7, as it should be between 5 and 10 (Hair et al., 2013). The present study indicates that Academic Performance (Q<sup>2</sup> = 0.094) and Engagement (Q<sup>2</sup> = 0.122) holds weak degree of predictive relevance

## DISCUSSION

The Higher Education Commission Vision 2025 demands Public and Private sector Higher Education Institutes to equip the universities with updated and upgraded technology, installation of free WIFI to public sector universities, setting up of security equipment and surveillance camera's throughout Institutes, pledge the concept of entrepreneurship and innovation, establishment of technology parks and hubs within campuses, formation of smart classroom, development of innovation infrastructure for knowledge inculcation and exchange, institutionalization of Learning Management System (LMS) and user friendly in house e-portals, development of quality oriented physical infrastructure that can retain the interest of students to learn and shape the personalities and lastly the Higher Education Commission Vision 2025



envisioned the improvisation of the overall standing through academic outcome of the students and the overall ranking of the university (Taylor, 2017).

Present research has employed classical theory of change, the three-step model of planned change proposed by Kurt Lewin. This model suggests that planned change can be implemented through firstly unfreezing the old behaviors (by introducing change), then moving student towards (experiencing new behavior with upgraded facilities) then refreezing their new behaviors (while witnessing the outcome). Major proposition and related findings of this study suggest that unfreezing can be done by introducing change in technological facilities which will unfreeze the old behaviors of students. This unfreezing step after breaking the ice will lead to students' engagement, reflecting a moving/transition step, that will lead to towards Academic performance of the students (refreezing).

Hypothesis 1 in present study has established a positive and significant relationship of Technological Change with students' engagement. The result section of this relationship indicates that beta value is 0.497, which determines that one percent change in Technological facilities will ultimately make 49.0% change in students' engagement hence signifies a strong relationship. This finding is immensely in line with the literature, where digitally enriched environment for the academic's persistence impacts student engagement. The use of technology is the ecosystem or the environment of Higher Education Institutes transform students to acquire direct level of academic engagement with the anticipated academic content (Fonseca et al., 2014). Students who study in technology oriented smart classrooms transmits high level of class participation, demonstrates more interest in learning, greater motivation to accomplish the academic task on time (Trimmel & Bachmann, 2004).

In the Public and Private Higher Education Institutes, the use of internet via free WIFI inside the classroom for academic purpose positively effects on the engagement of students, since reading and writing skills will be improved with help of extensive data available on the internet (Suhail & Bargees, 2006). Classroom technology (Multimedia projector, audio system, WIFI, official SMS service and e-portals) provides a captivating source of interaction within academic domain, ranging from retrieving and understanding concepts and explanations with the help of multimedia projections, developing notes, enhanced participation in academic sessions, access to the reference material, knowledge retention by working on the licensed software's that stretches clear understanding of the students engagement (Fried, 2008; Hyden, 2005; Juniu, 2006; Rust, O'Donovan, & Price, 2005; Weaver & Nilson, 2005; White & Robertson, 2014; Williams, Karousou, & Mackness, 2011).

To integrate latent constructs (Technological Change and Student Engagement) of present study with the hypothetical groundwork of Kurt Lewin three step Model of planned change, it is evident to mention that with the technological change and the facilities provided in Public and Private



Higher Education Institutes, the old frozen behaviors of students (which includes limited learning, less worldwide exposure, lazy participation in class, less effective and more time taking learning ) will get unfreeze and move towards changing/transition stage (which includes students learning engagement with regards to cognition, behavioral and emotional) that will lead to academic performance of the student.

In accordance with the underpinning supporting “Social Exchange Theory” to the theoretical framework of the present study, technological change and the inclusion of technological facilities provided in Public and Private Higher Education Institutes will initiate the relationship of social exchange among students which will be reciprocated by students with their academic engagement in regards to daily basis attentive learning, completing assignments and projects, multidimensional learnings and sharing of knowledge outside and improved power of brainstorming on various concepts.

Present study investigated that technologically supported learning environment will enhance the student’s engagement by becoming more proactive in learning and taking precautionary measures for accomplishing their learning goals, and thus students intact themselves well and become the ambassador of the institutes.

Hypothesis 2 in present study has established a positive and significant relationship of Students Engagement with Academic Performance. The result section of this relationship indicates that beta value is 0.468, which determines that one percent change in Students Engagement will ultimately make 46% change in Academic Performance hence signifies a strong relationship. This finding is immensely in line with the literature which determined that students engagement has rightly been associated with the academic performance of the students (Sukor et al., 2021). The students of Public and Private Higher Education Institutes gets the sense of academic engagement with the multi-disciplinary domain of behavior, cognition and emotions. Students’ engagement in respect of Behavior includes (attentiveness, punctuality, putting efforts, rational and logical participations, learned attitude and consistency) (Reeve & Tseng, 2011), students emotional engagement refers to (sense of belonging, worthwhile learning, no feeling of frustration, undue anxiety and anger while remain in the campus) (Salim et al, 2018), consequently the cognitive engagement of the students refers to (in-depth understanding and retaining of the concepts learned in classrooms, mindful presence in the class and in activities performed outside of the class, applying study strategies at the time of examinations and sharing of learned knowledge, skill and observations)

The academic engagement of the students is well integrated with the participation of student in purposeful academic happenings both inside and outside of the classroom (Kuh, 2003; Kuh et al., 2007). Students’ engagement in Higher Education Institutes are also categorized within three magnitudes; strength, perseverance and interest. It will be justifiable to say that students with academic engagements and with encouraging behavior towards academic institute will be the



prospective beneficiaries with regards to academic performance. Behavioral engagement of students leads them to experience proficiency in reading, which is one main factor in achieving academic performance (Lee, 2014). Public and private higher education institutes that keep the students fully and willingly engaged in a variety of in-house academic content with the intention to contribute to treasured outcome of the institute.

In accordance with the underpinning supporting “Social Exchange Theory” to the conceptual framework of the present study, with students’ engagements and the performance of the overall status and the goodwill of the academic institute will rise, simultaneously the future financial aspects will also get benefitted. The currently enrolled students who after getting effective education and an opportunity to get engaged academically will eventually become graduated and turns into alumni after years. Some will become entrepreneurs, some will be leading multinational organizations, some will be offering consultancy services to the potential clients and etc, keeping the student’s progression in mind, the aspect of social exchange theory will get unveiled when the graduated students get themselves engaged with the academic institutes, but this time not as a student but as a financial donors or for professional support services.

The mentioned scenario will not become a reality until the management of Public and Private Higher Education Institute provides a conducive environment for the students to get academically engaged and outperform.

Academic performance of the students is considered as the yardstick of the educational institute’s quality and worth. The features accompanying academic performance are students’ engagement with the content, study patterns and utmost level of satisfaction with the preferred degree program, students approach to solve problems, healthy group discussion by which students get to know other people’s paradigm, students engaged themselves to improve writing and communication skills. When the students put quality efforts to educational events and happenings that also put direct and significant impacts on the student academic performances.

Hypothesis 3 in present study has established a positive and significant mediating role of student’s engagement between technological change and academic performance. This finding is immensely in line with the literature Wekerle et al. (2022) which determined that the effectiveness and the efficient use of technological facilities in Higher Education Institutes contingent to the extent to which they establish productive and interactive students engagement which becomes relevant for the students to attain academic performance and ready to work in an ever challenging work environment. With the right guidance of tech-oriented hub of knowledge and its integration with academics in higher education level, students seek variety and choice to accomplish project and assignments with new and trendy ideas. With the right integration of technology in academic setup, students feel motivated and also find themselves engaged during the multiple stages of completing any project or assignment. When public and private Higher Education Institutes purposefully



integrate technological facilities in learning environment, students' behaviors, perception and attitudes get positively influenced which accelerates the engagement and they transform beyond traditional knowledge and comprehension of concepts and afterwards at the time of practical implication of all the learned concepts become easy to put forth (Brown et al., 2013).

While technology becoming more predominant into contemporary society, Public and private sector Higher Education Institutes of Sindh Province facilitates students with technology in classrooms which includes; fixed computer system along with mouse and a keyboard, the classrooms are equipped with Multimedia Projector with Ceiling Mount/Holder, the academic building has wired Internet connections throughout the classrooms, libraries and Labs, students get the facilities of speedy WIFI connections, academic institutes use SMS/Email service to intimate students regarding rescheduling of classes, Social Media Applications/Video Conferencing Tools for Academic Purpose (Facebook, WhatsApp Groups, Zoom, Google Meet, Skype and Microsoft Teams), Higher Educational Institutes arrange Webinars/online workshops/Conferences on Multiple topics, Licensed Software's in Labs which students use for retrieving more integrated knowledge, campus administrations also facilitates live video streaming facility which covers campus events, presentations etc. to be watched at YouTube, Facebook and Websites etc., The facility of e-library promotes broad spectrum of getting knowledge on a particular topic or problem, E-Solution Portals which includes course content, attendance status, semester results and etc., with the help of E portal, students have access to online resources which includes (Videos, Lectures and Notes), students are also facilitated with practical learning lecture halls with Virtual Reality (VR) tool kits, to cope up with the security concerns security cameras are fixed throughout the Academic Building (Inside and Outside). With the technological facilities in Higher Education Learning Environment, students perceive high level of commitment with their studies, they feel intensification within their academic interest and boost in technical skills.

With technological advancement, students of public and private Higher Education Institutes feel themselves able to work with peers and classmates using technological facilities, discover creative content via technological upgradations, the cognitive process gets accelerations, participate in fact finding learning (Hillman, 2014), amalgamate information though worldwide sources and establish a strong sense of communal presence.

## **CONCLUSION**

The Pakistan Higher Education Commission Vision of 2025 mentions the planning of Information Communication Technologies and other tech-oriented facilities for education 2017-2025. Since technology in education is being used at a very increasing pace in order to improve education access and methods. Effective and reliable technology can dramatically strengthen learning and subsequently students perceive high level of commitment with their studies, they feel intensification within their academic interest and boost in technical skills. Therefore, present study



concludes that in Pakistan, where public and private Higher Education Institutes facilities the students with learning technology, students' engagement will have a subsequent boost and then ultimately their academic performance will be significantly and positively impacted.



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