

Impact of Social Media on Higher Education Performance in Pakistan

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ABSTRACT

Technology has transformed the way we live. Global internet has made inroads to every sphere of human life, today we cannot think of staying away from internet and global connectivity. Online learning applications, although have transformed the complete learning ecosystem, however, education performance especially in the sphere of higher education needs careful evaluation and examination. A unified scale therefore cannot quantify the effects of social media platforms and online learning on a particular education segment or bracket. The higher education performance of the students and professional of Pakistan, is dependent on many factors. Beyond economic and energy constraints which impede availability of low-cost power and access to internet, there are numerous other factors which need to be examined and analyzed to understand the impact of social media on higher education in Pakistan. Intensity of social media usage, digital literacy, access for exchange of information, performance expectancy and technology learning are some of the spheres which have direct bearing on academic performance. Hypothesis testing showed significant effect of time spent on social media, skillset developed during that time spent, frequency of social media use for academic purposes has significant relationship for higher education performance. Further the usage intensity develops the habit pattern of participation and questioning. Collaborative learning and peer competition also increase with the increased use of social media for higher education. Academic engagement enhances and a global community of learning is likely to formulate beyond barriers where reputable international standard institutes become within reach and academic discussion through social media with those forums enhances the higher education performance.

Keywords: Social Media and Education, Social Media Usage Intensity, E-Learning, Academic Engagement and Digital Literacy.

INTRODUCTION

Technology has transformed the way we live (Hamad & Jia, 2022). Every sphere of human interaction has been affected by the immense influence of technology (Magliocca et al., 2024). The pace of technology has intensified especially at the beginning of twenty first century (Grinin et al., 2021). Global internet has made inroads to every sphere of human life, today we cannot think of staying away from internet and global connectivity. Computer users have increased from 390 Mil in 1990 to over 6 billion in 2026 (Nolan, 2021). Today 68% of the global population uses the internet with 5.6 billion users (del Portillo et al., 2021). Pakistan also has seen a surge in computer/mobile users over the last 25 years. In

2025 Pakistan recorded over 190 million mobile computer users (Ali et al., 2025). This describes that technology has inspired us to rethink human activities and virtually the machine governed to machine led era is about to start. The omni presence of global internet has created a unique web of human interaction where expertise are shared, imaginations are transformed into realities and creativity is at its peak (Pangarkar et al., 2022). Social interaction, business, banking, development, communication, interstate relations, engineering, services and agriculture have witnessed a profound influence of technology (Schiller, 2024). Social media and social media apps have provided an acme of solutions to almost every human problem. Education, the very basic human activity for material and intellectual growth, has also seen a tremendous influence of technology. Education which needed a face-to-face interaction not only to galvanize and stimulate human minds but also to polish social interaction, is now being transformed through social media applications (Kumar, 2025).

Online learning applications, although have transformed the complete learning ecosystem, however, education performance especially in the sphere of higher education needs careful evaluation and examination. The effects of online social media platforms are tier centric (Willems, 2021). Every education system, may it be pre-nursery, Primary, Secondary, higher secondary or professional has its own peculiar requirements, determinants and desired outcomes. A unified scale therefore cannot quantify the effects of social media platforms and online learning on a particular education segment or bracket. Furthermore, the societal aspects, propagation of internet resource and national technological prowess are also the key factors which profoundly impact online learning systems (Md. M. Rahman & Hossain, 2025). Higher education is a sector where professionals and students both need access to the latest developments, access to the fastest online resources and rapid information exchange (McHaney, 2023). These prerequisites establish the higher education performance linkage to the online education ecosystem. The personality traits of intense social media usage and a belief that this usage will ultimately result in enhanced education value are those factors which affect the higher education performance.

The technological divide between the developed and developing is widening with the advent of newer technologies (Popkova et al., 2022). This divide has impacted on every sphere of life, particularly the youth. The aspiring youth of developing countries, especially the students of higher education, owing to omni presence of the global internet feel more secure through online education ecosystem (Arora, 2024). Youth of developing countries feel deprived of modern technological resources and therefore attempt to connect to world class higher education institutes through online systems and social media platforms. The technological prowess of the Western countries, ease of living and availability of online resources outmatch the education ecosystem of developing countries (Mhlanga, 2024). Pakistan is no exception, the vibrant youth of the our country in the quest for access to state-of-the-art technology and education from world class institutes and professional is induced to use online media platform and education resources.

The higher education performance of the students and professional of Pakistan, is dependent on many factors. Beyond economic and energy constraints which impede availability of low-cost power and access to internet, there are numerous other factors which need to be examined and analyzed to understand the impact of social media on higher education in Pakistan. Pakistan is low-income country where youth development is hampered by lack of resources. Youth, in addition to their education, must earn a living in many cases, access to internet in some parts is restricted or inadequate and technological disparity is also a major concern in certain areas. Academic performance of students and professional in Pakistan at higher education institutes therefore is dependent on many factors and underlying causes.

Intensity of social media usage, digital literacy, access for exchange of information, performance expectancy and technology learning are some of the spheres which have direct bearing on academic performance (Davids & Waghid, 2021). Without analyzing these factors, the higher education performance of the youth cannot be interpreted correctly. These factors are further intensified through the

induction of academic engagement using online social media platforms and digital literacy (Salimi et al., 2025a). Therefore, there is a requirement to comprehensively examine how factors of social media usage intensity, performance expectancy, perceived usefulness, technological learning and document exchange impact the higher education performance and how the influence of digital literacy and academic engagement on these factors alter the higher education performance (Holm, 2025).

The research is aimed at examining and analyzing the impact of social media on higher education performance in Pakistan. The objectives also include synthesis of effects of social media usage intensity, the perceived usefulness of social media platform for education purposes by the students, the performance expectancy of the social media learning platform by the students, urge for technological learning and importance of information and document exchange through social media education platforms. The objectives also include the analysis of academic engagement and digital literacy on the factors affecting the higher education performance in Pakistan. The research aims to examine the main factors on which the higher education performance depends and the mediation and moderation of academic engagement and digital literacy respectively.

Social media has profoundly impacted the higher education in Pakistan. The impact of social media on higher education performance would be examined through following research questions: -

- a) How social media impacts higher education performance under the direct relationship of social media usage intensity, perceived useful by the students, performance expectancy, students technological learning and document exchange.
- b) How social media impacts the higher education performance of students if factor of academic engagement is mediated.
- c) How social media impacts the higher education performance of students if factor of digital literacy is moderated.

The research being impact centric has been kept quantitative, where the direct influence of the dependent factors would be analyzed through a survey questionnaire from students, staff and faculty of reputable higher education institutes. The analysis and examination of the received answers would establish the correlation between the dependent and independent variable, also the effects of mediator and moderator would be examined. The quantitative nature of the research would be useful in establishing a direct measurable connection between the factors and the output. In this connection following hypothesis were formulated:-

H1: Social Media Usage Intensity (SMUI) has a significant relation with Higher Education Performance.

H2: Perceived Usefulness (PU) has a significant relation with Higher Education Performance.

H3: Performance Expectancy (PE) has a significant relation with Higher Education Performance

H4: Technological Learning (TE) has a significant relation with Higher Education Performance

H5: Document Exchange (DE) has a significant relation with Higher Education Performance

In-Direct Relationships

H6: Academic Engagement (AE) mediates the relationship between Social Media Usage Intensity and Higher Education Performance

H7: Academic Engagement mediates the relationship between Perceived Usefulness and Higher Education Performance

H8: Academic Engagement mediates the relationship between Performance Expectancy and Higher Education Performance

H9: Academic Engagement mediates the relationship between Technological Learning and Higher Education Performance

H10: Academic Engagement mediates the relationship between Document Exchange and Higher Education Performance

H11: Digital Literacy moderates the relationship between Academic Engagement and Higher Education Performance

This quantitative research is going to examine the relationship between social media and higher education. Performance parameters of this research have been examined through a survey questionnaire answered by students, faculty and staff of reputable universities in Pakistan. Pakistan is a developing country, so the model of this research would be useful to generate new analyses for the developing countries of the world. The study would be significant for governments and higher education establishments of the developing countries to understand the requirements of the youth to have fruitful utilization of the social media for better academic performance in higher education. The study would also benefit the academia in establishing the linkages between social media and higher education performance directly and through academic engagement and digital literacy. The study would also open new analysis patterns for usage of futuristic technologies for education and their impact on higher education performance. The study would also benefit the technology sensitive application development companies to design such social media apps which result in useful contribution for academic performance of the students during higher education.

The study would focus on impact of social media on academic performance in Pakistan. The research framework would be restricted to the responses of the survey from reputable higher education institutes only. All three stakeholders, the faculty, the staff and the students have been surveyed to collect a rationale response. The research framework has been focused on the primary factors of availability and accessibility of the global network.

The study has been focused on survey responses from reputable higher education institute of Karachi, Pakistan. Its applicability to the areas with restricted access to global internet, poor economic conditions and low higher education literacy is inadequate. Further the responses have recorded over a wide demographic range, however the numbers are limited which restricts the universal applicability of the data.

The study analyzes the social media usage intensity, which signifies the availability and useability of an individual to use social media applications for education purposes. The perceived usefulness is an individual physical and psychological response based on experience with social media during higher education commitments. Technological learning refers to a access to the modern technology through

social media applications. This access is dependent upon the connection to reputable leading global educational institutes. The document exchange refers to the transfer of information through digital means especially through social media applications during higher education commitments.

Analysis of impact of technology on human lives has been at the core of many researchers. Social media being the latest of human technologies and with AI augmentation it has taken the center stage of technological aspirations (Hassani et al., 2020). Education in general and higher education in particular are one of the core capabilities of societies to transform themselves. The impact of social media on education therefore has been under intense research with varying theoretical models. Unified Theory of Acceptance and Use of Technology-2 (UTAUT-2) is a theoretical construct which explains the user experience and facilitation while using the high-definition videos for public reference (El-Masri & Tarhini, 2017). The social media platforms are now so advanced and powerful that their user interface can create and play high-definition videos for content delivery and explanation. The intent of higher education is the creation of atmosphere where professionals can interact without interference (Becher & Kogan, 2025). This theoretical construct enables this interaction of professionals without any traffic interference. Further the interactive sessions need clarity of voice and video to understand the problem statements and relative solutions. This model illustrates high-definition interaction with optimum clarity enhancing the user experience both in terms of quality and outcome.

Education through online social media platforms is a user intense phenomenon, the habit pattern of individuals and rapid exchange of information are the prerequisites to have optimum results of education through social media (Paiman & Fauzi, 2023a). Similarly, the advent of social media has transformed the learning experience into more information centric. Education as an instrument of transformation used to be more restricted to certain bounds acceptable to a minimum standard for common students at all levels including higher education. However, with social media applications it is a user experience and individual skills are the base for acquiring more knowledge out of similar set of available information and in the presence of similar instructors/educators (Zeng et al., 2022). This interesting facet has been explained through theoretical modeling of Vygotsky as Constructivist Learning Theory or Constructivist Approach for Innovative Trends in Learning and Teaching. The teacher or professional through social media acts as a peer who through collaborative learning helps the student to accomplish the assigned task. The cognitive abilities vary with the individuals and so are the social media handling skills, hence theoretical model establishes a linkage between the learning in higher education through a bridge between the professional and students with varying abilities and skills. The user Social Media Usage Intensity (SMUI), Perceived Usefulness (PU), Performance Expectancy (PE), Technological Learning (TL) and Document Exchange (DE) are the user specific references which align with both the theoretical models illustrated above. Academic Engagement (AE) and Digital Literacy (DL) both are habit pattern specific dependent upon the cognitive abilities and social media skills, the derivatives of both theoretical models.

Social Media Usage Intensity

Social Media Usage Intensity is the first independent variable. It linkages the student of higher education, with his own habit pattern towards social medial usage. The construct of this independent variable is closely linked to the user's time spent on social media, a direct connection for skill development. Frequency of the social media application use for academic purposes, which establishes the academic performance link of user through social media and the scalability of the social media usage with performance in learning and higher education.

Perceived Usefulness

Perception plays an important role for any task and higher education is no exception, the user's perception for usefulness of social media for higher education is the next independent variable. The user may consider the social media for higher education as a tool for ease of learning and acceptance of information technology. Users' perception that social media improves the learning efficiency or otherwise plays an important role for performance in higher education.

Performance Expectancy

The belief that being part of the best makes you the best is the next independent variable. Performance expectancy refers to the users' expectations that academic performance is enhanced through social media education platforms. The ease, speed and availability of related tools are such advantages which lure the users to feel inclined towards social media usage for improved academic performance in higher education.

Technological Learning

The next independent variable is technological learning, which linkages the user with latest technological spheres through social media applications. The perception and belief that social media improves academic performance is a key variable which connects the performance in higher education with social media usage. The users reflect to be part of an eco-system which is technology centric and cherishes to be part of the most modern means of education through social media education.

Document Exchange

The last independent variable is the document exchange which enables users to exchange information in a secure way at a higher pace. Rapidity and exchange of information for enhanced academic performance are the key parameters. Users' confidence in social media applications for information exchange and access to shared knowledge forums has a direct relationship with academic performance at higher education level. Professional exchange information resources through direct information exchange or access-based logins where time factor becomes redundancy.

Academic Engagement

The higher education performance is impacted indirectly by social media user intensity, perceived usefulness, performance expectancy, technological learning and document exchange through academic engagement. The mediator academic engagement refers to participation in higher education level academic activities using social media applications. It also indicates academic interaction with peers during academic activities and reflects teacher student interaction during social media-based learning. The academic engagement has relationship with behavior pattern of the individuals, reflecting their social media usage intensity, performance expectancy, perceived usefulness, technological learning and document exchange.

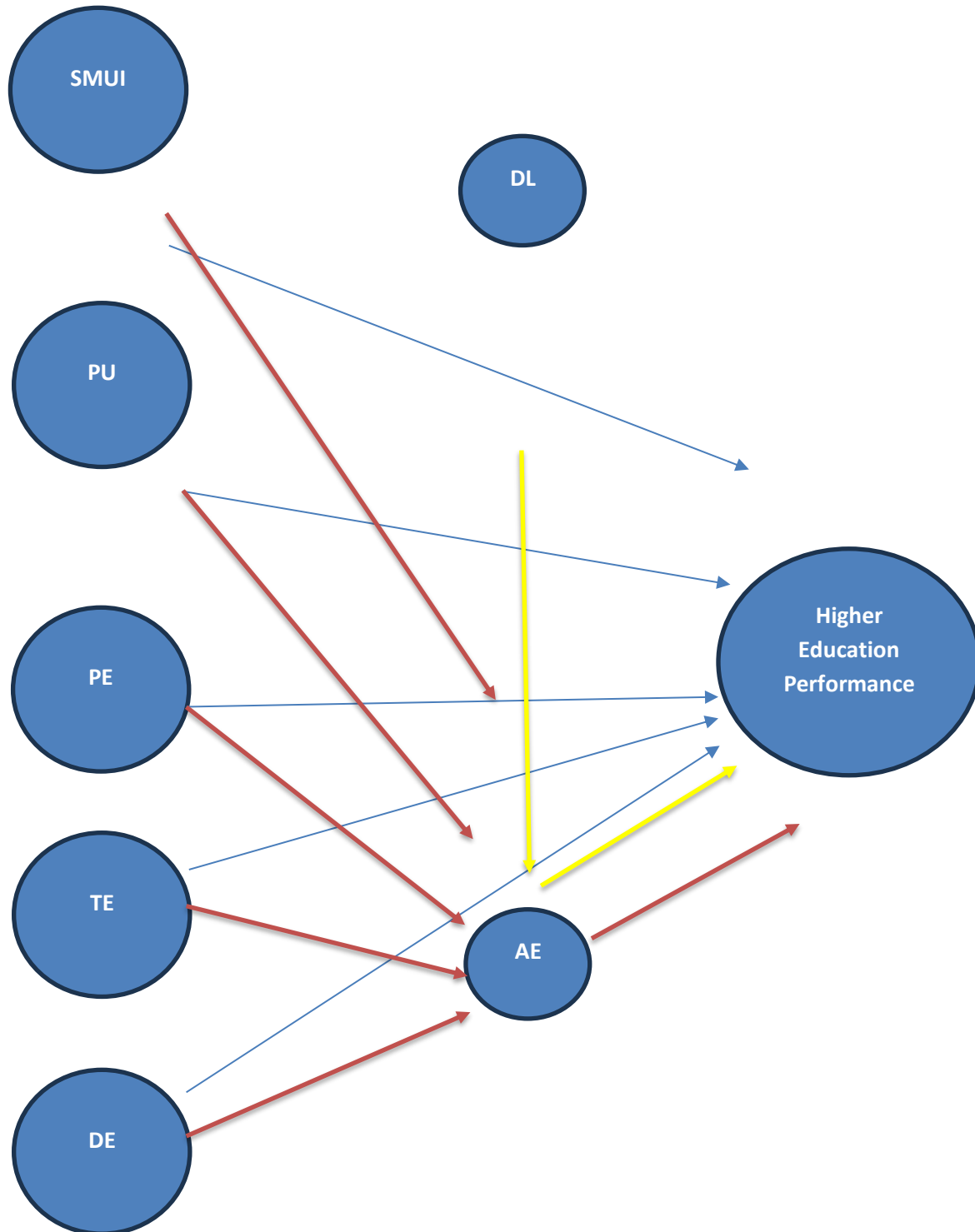
Digital Literacy

The moderator digital literacy is a skill based individual attribute. It defines the ability to effectively use social media for academic purposes reflecting individual's scalability to use social media for academic purposes, his ability to ask questions and engage his peers and instructors. Further the moderator has interconnect with academic engagement with direct bearing on higher education performance of the user.

Higher Education Performance

The user's higher education performance is dependent variable, which signifies association between social media use and academic performance through family bonding and collective learning. The behavioral pattern of individual with one's social media usage intensity, perceived usefulness, performance expectancy, technological leaning and document exchange having a direct relationship with the performance. The mediating role of academic engagement creates an indirect relationship between independent variables and higher education performance. Access to futuristic technologies, ease of use, time flexibility and quality of academic engagement inclined the users for social media based higher education.

The conceptual framework of the impact of social media on higher education performance is as under: -



The users are required to perform the specified tasks in connection with linkages to the latest technology. This defines the personal attributes, intensity and time spent on a particular system to achieve the desired end goal. The innovative nature of social media with live high-definition video contents and live

streaming the perceived useful enhances and performance expectancy of the individual in the competitive technological centric environment is also enhanced. The cryptology techniques and availability of passcodes enhance the user-to-user confidentiality with more confidence in technology centric social media environment for education. Furthermore, the personalization of information, flexibility of time, ease of access, rapidity of information exchange and abundance of knowledge resources makes technology centric social media use for education a central pillar for higher performance enhancement. Social media creates a collaborative environment in higher education where accessibility to peers and personalized attention by the instructors is possible. Technological learning has facilitated the creation of a social media centric web for collaborative space and information exchange. Academic engagement plays a pivotal role in higher education performance, students' attentiveness, his responses and participation are a key segment which connects the independent variables of the construct. Everything revolves around digital literacy, if the user is unaware of the social media usage and his expertise are lower than the expectancy then optimum utility of the social media for higher education may be compromised.

Social media Usage Intensity and Higher Education Performance

With the evolving dynamics of technology social media usage has become a norm in higher education. The social media usage intensity refers to the time spent exploring social media for academic purposes (Paiman & Fauzi, 2023b). The hypothesis has been independently tested by another construct to find the relationship between social media usage intensity and higher education performance.

Perceived Usefulness and Higher Education Performance

The direct linkage of perceived usefulness of social media and higher education performance is a function of uses mindset of connectivity to the state-of-the-art technological resource and flexibility of time as well as quick responses (Badr et al., 2024a). The hypothesis has been independently tested in another setting with other mediators and moderators.

Performance Expectancy and Higher Education Performance

Social-Media-Based education develops a trust for the user for optimized performance in higher education. Quality, access, rapidity and availability are some of the attributes which foster trust (T. Rahman et al., 2021). The Hypothesis has been tested in a different setting with different mediators and moderators.

Technological Learning and Higher Education Performance

Technological learning leverages the students, instructors and staff with better opportunities to explore more, stay abreast with the latest developments and social media is a mean to use technology for higher education performance (Aldahdouh et al., 2020). The direct relationship has been tested in a different setting with different moderators.

Document Exchange and Higher Education Performance

Social media is key medium for knowledge exchange, information sharing and resource access (Fauzi et al., 2023). Considering higher education a sector for professionals, ease of information and knowledge sharing has a direct relationship with higher education performance. The type of cryptology systems and end user certifications in available make the information and knowledge sharing through social media more secure and trustworthy.

Academic Engagement as Mediator for Independent Variables and Higher Education Performance

Academic engagement refers to the participation of the students in academic activity using social media (Mahdiun et al., 2020). Academic engagement has a mediating effect on social media usage intensity, perceived usefulness, performance expectancy, technological learning and document exchange on higher education performance. Academic engagement enhances or reduces the overall higher education performance through mentioned independent variables. At professional level the users exchange information in all relevant fields through academic engagement, feel confident and secure to share and acquire knowledge and stay technologically abreast through social media applications.

Digital Literacy as moderator, Academic Engagement and Higher Education Performance

Digital literacy refers to the skills and knowledge on social media to have academic engagement for higher education performance. Digital literacy reflects academic engagement, and it enhances or reduces the academic engagement depending upon the user's expertise on social media hence affecting the higher education performance (Salimi et al., 2025b). The moderation effect of digital literacy on academic engagement has been hypothesized.

Research Gap Analysis

The high-definition video content sharing and social media user intensity has been adequately discussed. Through social media higher education and public service can be executed without interference. The social media applications provide the users with a unique set of opportunities to have flexibility in learning, better content review and access to technology (Molnar et al., 2013). The construct however refers to only behavior use identifying the usage intensity. The efficacy of social media platforms for higher education performance creating a family and peer bonding has also been modeled and researched (Zhang et al., 2024). The collaborative structure of social media platforms and their effect on higher education performance have been referenced. The framework proposes mental well-being as a moderator for enhanced higher education performance. However, the mediation effect of academic engagement has not been explored. Effects of social media on mental, social, economic and spiritual wellbeing have been adequately researched and modeled (Afzal et al., 2024). This research, however, does not include academic wellbeing and higher education performance as an outcome. Attention to attend the academic activity as an outcome has also been researched with social interaction and social engagement as variables (Nathalie, 2024). However, higher education performance has not been modeled. Digital literacy and green information have been frame worked and researched to analyze the effects of social media on academic performance (Dong & Zhang, 2026). However, academic engagement effects have not been included. Perceived use of information technology and perceived usefulness of social media has also been researched (Badr et al., 2024b). The theoretical model has been established but it does not include the mediation factor of academic engagement. Document exchange, knowledge sharing and information acquisition have also been researched (Sivakumar et al., 2023). The framework concludes the knowledge sharing as an outcome; however, it does not comment on higher education performance. It has been established that research gap exists for assessment of higher education performance through social media usage intensity, perceived usefulness, performance expectancy, technological learning and document exchange. The mediation effect of academic engagement for all independent variables and moderation effects of digital literacy through academic engagement on higher education performance is novel framework model.

Quantitative research design has been employed in this study to investigate the impact of social media on higher education performance in Pakistan. The primary data was collected through survey form. The quantitative research methodology was preferred as it allows responses from all three stakeholders in the

academic process from reputable higher education institutes. The students, faculty and management staff all three recorded their responses adding diversity to the populated primary data. The statistical analysis of the responses received and collected data would formulate a tangible measure for impact of social media on higher education performance. The data tangibility adds to the objectivity for subsequent evaluation of the processes involved in the impact of social media on higher education.

A well-structured questionnaire was prepared to record the responses pertaining to both individual behavioral pattern as well as practices. The experience of social media was also accorded due priority in the questionnaire to have statistical evidence on the personality-based experience students, faculty and the management staff. The questionnaire was deliberately kept multidimensional to have the statistical view of the correlation among various aspects of social media with respect to usage, skill, expertise, access and reliability with the higher education performance. The quantitative research was focused on identifying the correlation between social media and higher education performance. The independent variables were selected as Social Media Usage Intensity (SMUI), Perceived Usefulness (PU), Performance Expectancy (PE), Technological Learning (TE) and Document Exchange (DE). The dependent variable was selected as Higher Education Performance (HEP). The important mediation effect of Academic Engagement (AE) was made part of the questionnaire and AE was moderated through Digital Literacy (DL).

The research sample was carefully chosen to include people with diverse educational and working experience from reputable higher education institutes. It was ensured that all three stakeholders with varying degrees of experience are selected in the sample. The students from different reputable higher education institutes attending diverse degree programs, faculty with variety of both working and educational experience and management staff of diverse cadre was made part of the sample.

The total sample size was 98 with diversity of both genders, multiple age brackets, diverse educational and working experience and different reputable higher education institutes. The relevancy and credibility of the data was ensured through selection of most respondents who are directly affected by the phenomenon. Their direct involvement in the process, handling of the situation and personal experience and observation has made the data more relevant and credible. The research adopted non-probability convenience sampling as all the respondents were purposefully selected because they were easily accessible, available and related to the research topic.

The primary instrument for data collection was the well-structured survey questionnaire. The form was circulated using google online protocols. The questionnaire was designed to record users' experience of social media for higher education performance. The questionnaire was designed to collect information through closed ended questions in two segments. The first segment recorded the information related to the respondent. This information included the gender, age group, income, work experience and education. The 2nd segment included closed ended questions reflecting users experience with social media linking it to higher education performance. The five point Likert Scale was used to record the respondent's reply for a particular question construct. Categorization of the Likert Scale is as under:

1	=	Strongly		Agree
2	=	Agree		
3	=	Neutral	/	No
4	=	Disagree		Comments
5	=	Strongly Disagree		

The 2nd segment comprised of 40 carefully crafted questions in eight sub sections. The section was designed to cover the interrelationship of independent variables, mediator, moderator and the dependent variable. The details of the eight segments is as under: -

- Social Media User Intensity assessed through time spent and frequency for academic use and higher education performance
- Perceived Usefulness of social media assessed through efficacy, rapidity and quality and Higher Education Performance
- Performance Expectancy through social media assessed productivity and performance and Higher Education Performance
- Technological Learning through social media assessed under novelty, exploration and technology access and Higher Education Performance
- Document Exchange through social media assessed under information exchange and knowledge sharing and Higher Education performance
- Academic Engagement through social media assessed under competitiveness, contribution and challenges and Higher Education Performance
- Effect of Digital literacy on Academic Engagement through social media assessed under ICT skills and exposure to new technologies and Higher Education Performance
- Overall Result and Effects on Higher Education Performance through Social Media

A carefully crafted questionnaire was used to ensure uniformity of response and make statistical analysis possible. Different questionnaire items were designed to get answers to the objectives and variables of the study and thus to enhance the validity of the research instrument.

The variables, both independent and dependent were subjected to data to validate the research framework. The impact of social media on higher education performance was analyzed based on the result of the populated primary data.

- Social Media User Intensity (SMUI) assessed the users' attractiveness to social media depending upon their time spent, and frequency to use for academic purposes only. Four items for respondents assessed this construct to establish linkage with higher education performance.
- Perceived Usefulness (PU) assessed users' willingness to accept technology through rapidity, quality and efficacy. Four items for respondents assessed this construct to establish linkage with higher education performance.
- Performance Expectancy (PE) assessed users' social media improves performance, through performance and productivity. Four items for respondents assessed this construct to establish linkage with higher education performance.
- Technological Learning (TE) assessed users' engagement and intention to attend lectures under the influence of technology, novelty and exploration. Three items for respondents assessed this construct to establish linkage with higher education performance.
- Document Exchange (DE) assessed the users' ease of information exchange and knowledge sharing by creating a collaborative learning environment. Three items for respondents assessed this construct to establish linkage with higher education performance.

- Academic Engagement (AE) as mediator was assessed using five items to record the responses. Academic Engagement reflected users' ability to participate in academic activities through discussions, questions and debate using social media.
- Digital Literacy (DL) was assessed by recording responses on five items by the respondents. The digital literacy was assessed based on skill and ability to use technology and applications pertaining to social to enhance the academic engagement for higher education performance.

The dependent variable, Higher Education Performance (HEP), being the key output was assessed by recording the respondents on six items. Higher education performance reflects the user's ability to have confidence in maintaining the desired standards of academic qualifications through engagement of social media application connected to the global internet and world's leading institutes.

Data collection was done systematically and followed appropriate scientific data collection and ethical procedure. Questionnaires were initially designed based on the objectives and conceptual framework of the study. Once the instrument was finalized, it was sent out online google forms to the three basic stakeholders in higher education, the students, faculty and the management staff of reputable higher education institutes. Participants were explained the academic purpose of the research, and they were assured that their responses will be kept confidential and anonymous. The survey was voluntary and respondents were given the chance to fill in the questionnaire at their own will. The data collected was screened to check for missing data and inconsistencies before analysis. Results were then numbered by the category on the Likert scale to be processed systematically and statistically.

Collected data was analyzed with descriptive and inferential statistics. The analysis was done through SPSS and Smart PLS to investigate efficacy of social media in higher education performance. The consistency of items within a construct was verified through Cronbach's Alpha reliability test. The correlation between the independent variable and the dependent variable was studied using Inference statistical technique. Adopting these statistical methods the study was able to establish a linkage between social media usage and higher education performance and describe how transformation of technology through use of social media has positively affected the higher education performance.

DEMOGRAPHIC ANALYSIS

A total of 102 responses were collected from the respondents for demographic analysis four responses were not included in the subsequent reliability and validity analysis. The respondents included students, faculty and management staff of the higher education institutes of various reputable institutes. Details are as under:-

Table 1: Gender

Category	Frequency	Percentage
Male	55	53.9
Female	46	45.1
Prefer not to Say	01	1.0

The demographic statistics of the gender category shows that male respondents had majority over female and 01 respondent did not disclose his/her identity.

Gender
102 responses

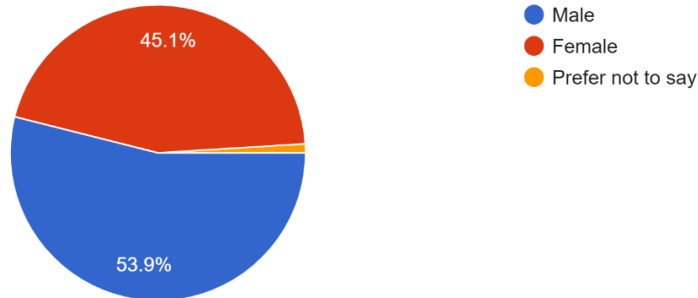


Table 2: Age

Category	Frequency	Percentage
15-25	72	70.6
26-35	16	15.7
36-45	9	8.8
46-55	4	3.9
56 and Above	1	1.0

The age category was dominated by the youth who were the major targeted audience for this quantitative analysis. Over 70% over the category was from 15 to 25 years bracket from various reputable higher education institutes.

Age
102 responses

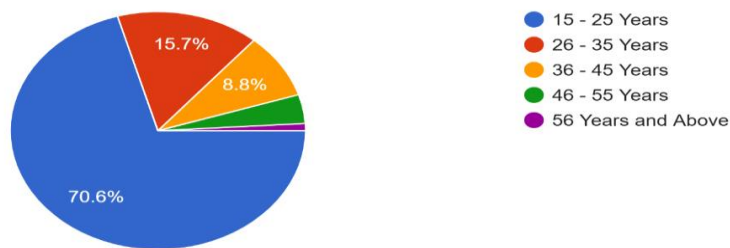


Table 3: Income Group

Category	Frequency	Percentage
Dependent	55	53.9
Less than 30K	13	12.7
30K-100K	15	15.7
101K-200K	13	12.7
201K-300K	5	4.9
More Than 300K	1	1.0

The category of income had 53.9% of the dependents which constituted the students of various reputable institutes.

Income Group
102 responses

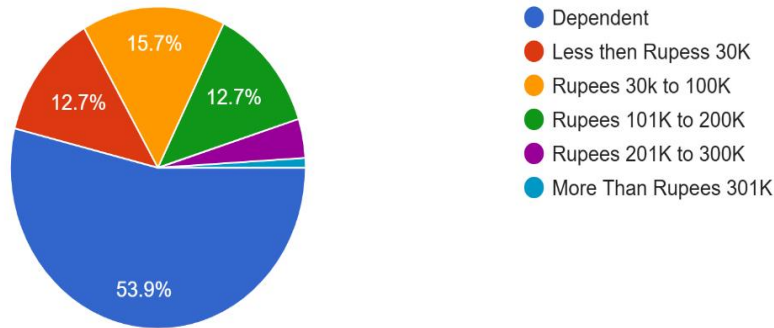


Table 4: Education

Category	Frequency	Percentage
Undergrad in Process	44	43.1
Undergraduate	19	18.6
MS in Process	16	15.7
Masters	17	16.7
PhD is Process	4	3.9
PhD	2	1.9

The education category had 43.1% of students from various reputable institutes. Respondents from faculty also had major share.

Education (Last Qualification)
102 responses

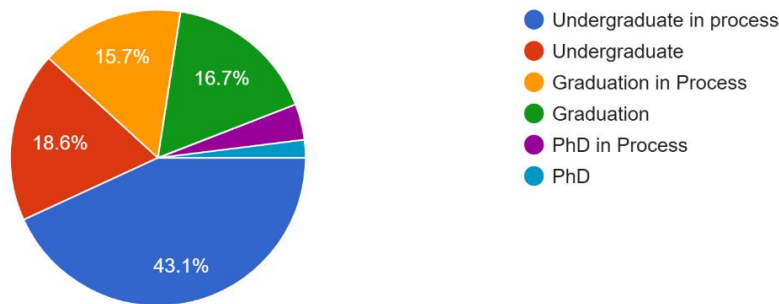


Table 5: Working Experience

Category	Frequency	Percentage
Student	61	59.8
Less than 5Y	21	20.6
Less Than 15Y	12	11.8
Less than 30Y	5	4.9
Less than 50Y	3	2.9

Students had 59.8% share of the respondents in working experience while the faculty and management also had significant participation

Working Experience
102 responses

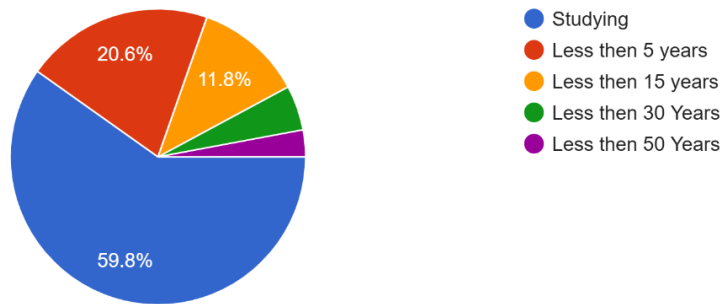


Table 6: Descriptive Statistics

		Gender	Age	Income Group	Education Qualification	Last Working Experience
N	Valid	102	102	102	102	102
	Missing	0	0	0	0	0
Mean		1.471	1.490	2.029	2.255	1.706
Std. Error of Mean		.0516	.0878	.1303	.1356	.1039
Median		1.000	1.000	1.000	2.000	1.000
Mode		1.0	1.0	1.0	1.0	1.0
Std. Deviation		.5210	.8871	1.3160	1.3693	1.0492
Variance		.271	.787	1.732	1.875	1.101
Skewness		.334	1.896	.982	.777	1.510
Std. Error of Skewness		.239	.239	.239	.239	.239
Kurtosis		-1.411	3.057	-.176	-.424	1.598
Std. Error of Kurtosis		.474	.474	.474	.474	.474
Range		2.0	4.0	5.0	5.0	4.0
Minimum		1.0	1.0	1.0	1.0	1.0

Maximum	3.0	5.0	6.0	6.0	5.0
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Reliability and Validity

Reliability and validity analysis were carried out through Smart PLS by coding all the responses containing hypotheses based on independent variables, mediator, moderator and dependent variable. All the constructs meet the accepted thresholds for internal consistency, reliability and validity.

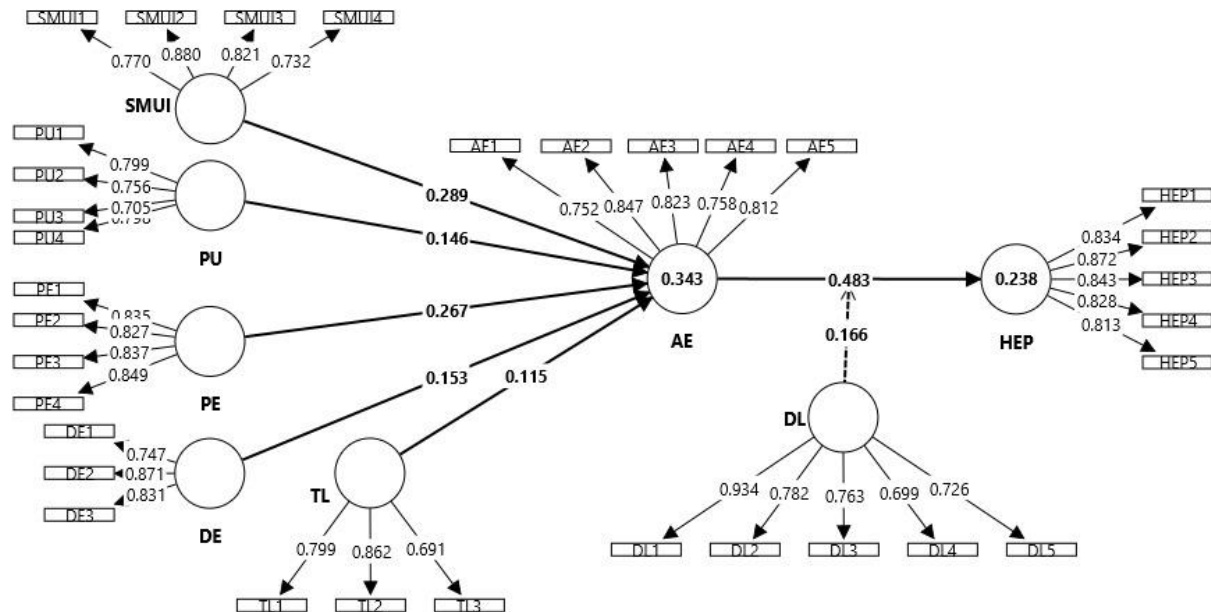


Table 7: Reliability and Validity Results

Construct	Cronbach's alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average variance extracted (AVE)
SMUI	0.821	0.880	0.878	0.644
PU	0.769	0.789	0.849	0.586
PE	0.858	0.859	0.903	0.701
TL	0.728	0.797	0.829	0.620
DE	0.761	0.804	0.858	0.669
AE	0.859	0.867	0.898	0.639
DL	0.884	1.064	0.888	0.616
HEP	0.895	0.905	0.922	0.703

The above table depicts reliability and convergent validity results, which are a requirement for a positive quantitative analysis. The values of Cronbach’s Alpha for all the variables range from 0.728 to 0.895. The desired value for positive correlation of the construct is 0.70. The abovementioned data depicts that all constructs had positive correlation and consistency within the desired parameters of advanced quantitative research. Similarly, the composite reliability is also well above 0.80, indicating the reliability of the data on the higher side.

The average variance extraction ranges from 0.584 to 0.703, the desired value for these parameters is 0.50. The data depicts that AVE is well within range and convergence of the data is verified for advanced quantitative research. The dependent variable Higher Education Performance construct has the highest

consistency and correlation with Cronbach Alpha of 0.895. Similarity the composite reliability of the Higher Education Performance and Academic Engagement have the highest values depicting their higher reliability and validity. All the results show that the model is statistically reliable and valid for further tests as they display satisfactory values within given thresholds

Path coefficients were calculated for all constructs with all variables details are tabulated below:

Table 8: Hypotheses Testing Results: Direct Relationships

Hypotheses	Constructs	Coefficient	T statistics	P values	Direct Effect
H-1	SMUI -> HEP	0.139	3.155	0.002	Supported
H-2	PU -> HEP	0.071	1.563	0.118	Not Supported
H-3	PE -> HEP	0.129	2.496	0.013	Supported
H-4	TL -> HEP	0.055	1.235	0.217	Not Supported
H-5	DE -> HEP	0.074	1.696	0.090	Not Supported

Table 9: Hypotheses Testing Results: Indirect relationship

Hypotheses	Constructs	Coefficient	T statistics	P values	Direct Effect
H-6	SMUI -> AE	0.295	3.424	0.001	Supported
H-7	PU -> AE	0.156	1.694	0.090	Not Supported
H-8	PE -> AE	0.263	3.030	0.002	Supported
H-9	TL -> AE	0.126	1.226	0.220	Not Supported
H-10	DE -> AE	0.166	1.810	0.070	Not Supported
H-11	DL x AE -> HEP	0.101	1.506	0.132	Not Supported

The recommended thresholds for T-statistics and P value are above 1.96 and below 0.05 respectively. The results show statistically significant. Construct wise analysis is as under:-

H-1 : Social Media Usage Intensity → Higher education Performance

- $\beta = 0.139$
- $t = 3.155$
- $p = 0.002$

The “coefficient” value suggests that connection of social media usage intensity on higher education performance is strong. “t” Statistics value suggests that the evidence of this correlation is also strong, and the “p” value suggests that the probability of the correlation due to chance is very low. Hence the relationship between social media usage intensity and higher education performance is confirmed. Hypothesis is supported.

H-2 : Perceived Usefulness → Higher Education Performance

- $\beta = 0.071$
- $t = 1.563$
- $p = 0.118$

The “coefficient” value suggests that connection of perceived usefulness on higher education performance is weak. “t” Statistics value suggests that the evidence of this correlation is also weak, and the “p” value

suggests that the probability of the correlation due to chance is very high. Hence the relationship between perceived usefulness and higher education performance is insignificant. Hypothesis is not supported.

H-3 : Performance Expectancy → Higher Education Performance

- $\beta = 0.129$
- $t = 2.496$
- $p = 0.013$

The “coefficient” value suggests that connection of performance expectancy on higher education performance is significant. “t” Statistics value suggests that the evidence of this correlation is substantial, and the “p” value suggests that the probability of the correlation due to chance is low. Hence the relationship between performance expectancy and higher education performance is significant. Hypothesis is supported.

H-4 : Technology Learning → Higher Education Performance

- $\beta = 0.055$
- $t = 1.235$
- $p = 0.217$

The “coefficient” value suggests that connection of technology learning on higher education performance is insignificant. “t” Statistics value suggests that the evidence of this correlation is weak, and the “p” value suggests that the probability of the correlation due to chance is high. Hence the relationship between technology learning and higher education performance is insignificant. Hypothesis is not supported.

H-5 : Document Exchange → Higher Education Performance

- $\beta = 0.074$
- $t = 1.696$
- $p = 0.090$

The “coefficient” value suggests that connection of document exchange on higher education performance is very insignificant. “t” Statistics value suggests that the evidence of this correlation is weak, and the “p” value suggests that the probability of the correlation due to chance is considerably high. Hence the relationship between document exchange and higher education performance is insignificant. Hypothesis is not supported.

H-6 : Social Media Usage Intensity → Academic Engagement → Higher Education Performance

- $\beta = 0.295$
- $t = 3.424$

- $p = 0.001$

The “coefficient” value suggests that connection of social media usage intensity through the mediation effect of academic engagement on higher education performance is significant. “t” Statistics value suggests that the evidence of this correlation is strong, and the “p” value suggests that the probability of the correlation due to chance is very low. Hence the relationship between social media usage intensity through the mediation effect of academic engagement and higher education performance is strong. Hypothesis is supported.

H-7 : Perceived Usefulness → Academic Engagement → Higher Education Performance

- $\beta = 0.156$
- $t = 1.694$
- $p = 0.090$

The “coefficient” value suggests that connection of perceived usefulness through the mediation effect of academic engagement on higher education performance is insignificant. “t” Statistics value suggests that the evidence of this correlation is considerably weak, and the “p” value suggests that the probability of the correlation due to chance is high. Hence the relationship between perceived usefulness through the mediation effect of academic engagement and higher education performance is insignificant. Hypothesis is not supported.

H-8 : Performance Expectancy → Academic Engagement → Higher Education Performance

- $\beta = 0.263$
- $t = 3.030$
- $p = 0.002$

The “coefficient” value suggests that connection of performance expectancy through the mediation effect of academic engagement on higher education performance is very significant. “t” Statistics value suggests that the evidence of this correlation is considerably high, and the “p” value suggests that the probability of the correlation due to chance is very low. Hence the relationship between performance expectancy through the mediation effect of academic engagement and higher education performance is significant. Hypothesis is supported.

H-9 : Technology Learning → Academic Engagement → Higher Education Performance

- $\beta = 0.126$
- $t = 1.226$
- $p = 0.220$

The “coefficient” value suggests that connection of technology learning through the mediation effect of academic engagement on higher education performance is insignificant. “t” Statistics value suggests that the evidence of this correlation is considerably weak, and the “p” value suggests that the probability of the

correlation due to chance is high. Hence the relationship between technology learning through the mediation effect of academic engagement and higher education performance is insignificant. Hypothesis is not supported.

H-10 : Document Exchange → Academic Engagement → Higher Education Performance

- $\beta = 0.166$
- $t = 1.810$
- $p = 0.070$

The “coefficient” value suggests that connection of document exchange through the mediation effect of academic engagement on higher education performance is insignificant. “t” Statistics value suggests that the evidence of this correlation is considerably weak, and the “p” value suggests that the probability of the correlation due to chance is high. Hence the relationship between document exchange through the mediation effect of academic engagement and higher education performance is insignificant. Hypothesis is not supported.

H-11 : Digital Literacy → Academic Engagement → Higher Education Performance

- $\beta = 0.101$
- $t = 1.506$
- $p = 0.132$

The “coefficient” value suggests that connection moderation effect of digital literacy through the mediation effect of academic engagement on higher education performance is insignificant. “t” Statistics value suggests that the evidence of this correlation is considerably weak, and the “p” value suggests that the probability of the correlation due to chance is high. Hence the relationship between moderation effect of digital literacy through the mediation effect of academic engagement on higher education performance is insignificant. Hypothesis is not supported

The data analysis of the quantitative research supports the significant effect of social media usage intensity on the higher education performance directly as well as through the mediation effect of the academic engagement. The time spent on social media, the frequency of social media usage for academic purposes and the participation in academic activity through social media proves to be the central point of the higher education performance of the user. The performance expectancy using social media for higher education has proved to have direct as well as indirect effect through the mediation of academic engagement. The perceived usefulness, technology learning and document exchange did not statistically prove to establish significant effect on higher education performance directly as well as thought the mediation of academic engagement. The moderation of digital literacy on academic engagement for higher education performance also did not establish any correlation.

The survey results from 98 stakeholders of reputable higher education institutes representing students, faculty and academic management participated willingly in the recording of their responses. They expressed satisfaction in recording the responses and cited their social media usage. The analysis showed that general perception of social media for academic purposes had high acceptancy. The results of the analysis of reliability showed that the questionnaire had a high internal consistency and correlation with

the value of Cronbach's Alpha being high. This is evidence of the survey items being good measures of the constructs and being repeatable and reliable.

Hypothesis testing showed significant effect of time spent on social media, skillset developed during that time spent, frequency of social media use for academic purposes has significant relationship for higher education performance. Further the usage intensity develops the habit pattern of participation and questioning. Collaborative learning and peer competition also increase with the increased use of social media for higher education. Academic engagement enhances and a global community of learning is likely to formulate beyond barriers where reputable international standard institutes become within reach and academic discussion through social media with those forums enhances the higher education performance. The efficacy of increased use of social media for academic purposes is established through statistical analysis and behavioral patterns of the individuals also plays an important role. The personality traits of being active, outspoken, participative and quality centric get polished through social media usage for higher education performance.

The insignificant effect of rapidity of information exchange through social media, creation of common knowledge sharing forum, exposure to technology, high technology education and accessibility did not statistically establish the correlation with higher education performance. The respondents also did not favor the moderation of digital literacy primarily due to availability of tutorial and language translators. The academic engagement due to usefulness of social media, rapid information access and peer accessibility was also not supported statistically.

The theoretical model of the UTAUT2, a Framework of Reference for Evaluating User Experience When Using High-Definition Video to Video to Facilitate Public Services has been further enriched. The social media usage intensity referring to time spent, skills developed and frequency for academic use support the theoretical foundations of the UTAUT2 model. The Constructivist Learning Theory Constructivist Approach of Vygotsky for Innovative Trends in Learning and Teaching is also supported by statistical analysis. The increased performance expectancy through innovation of social media cemented the theoretical framework. The respondents favored the performance expectancy using social media for higher education performance and enhanced academic engagement creating and group of global good performance through innovation has been established.

Quantitative study reflects certain practical implications towards impact of social media on higher education performance. The creation of global internet has connected virtually everyone. This connection creates a unique web of social interaction. Higher education has impact directly and indirectly on nation building, capacity enhancement and capability enhancement. The global powers, the owners of the global internet and technological companies have created a divide on this social interaction web as well. The developing countries cannot access technology sensitive information through common social media platforms. This widens the gap between the developed and the developing. Therefore, regardless of the usage pattern of social media for higher education performance the overriding factor of technology and access control would prevail.

The quantitative research was focused on Pakistan and higher education setup of Pakistan. The access to higher education by population of Pakistan is also a factor which has practical implications on this study. The percentage of population which is connected to internet and frequent power outage alongside bandwidth available for internet are few practical aspects which have practical implication. The equal access, availability of highspeed better bandwidth connection an global connections can enhance the efficacy of the social media impact on higher education in Pakistan.

The population size for this quantitative research remained a limitation. The 98 respondents from urban population connected to three facets of higher education, the student body, the faculty and the management had effects on data collections. The broadened database and large population including the universities with rural footprints could add new dimensions to the quantitative research. The effects of power outage, suspension of internet services and limitation of bans on some of the services could not be explored which restricted the analysis of negative impacts of social media on higher education.

This quantitative research can open doors for future research, adding new dimensions to the analysis. The impact of social pattern in Pakistan is one area which could add some new dimensions to the quantitative research. The family structure, female participation and gender inequality for social media usage for higher education performance are some of the facets which can create new vistas of quantitative research. The global internet limitations, restriction of access to technology, sensitive information and artificial intelligence are some other dimensions which impact social media. These factors can be explored to establish a link between social media and higher education performance. The urban rural divide and resource scarcity in the rural areas is another aspect which profoundly impacts the access to social media and ultimately higher education performance is impacted by these factors as well.

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