Impact of Leadership Competencies on Research and Development for Sustainable Quality Education in Pakistani Higher Education Institutions

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ABSTRACT
Leadership competencies plays significant role for the research and development skills among teachers and students because institutional leadership encourages the research and exploration culture in education institution. It providesrequired facilitation and resources to promote research and development platform for the scholars and researchers because it knows that the credibility and worth of higher education institution is based on research and developmental contribution of teachers and students furthermore it maintains the quality education in education institutions. Study aims to analyze the leadership competencies and research and development practices for teachers and students at higher education institution and study also explored the impact and relationship between leadership competencies and research and development practices for teachers and students at higher education institutions for the sustainability of quality education. Study was conducted through quantitative approach and causal effect and correlational designs were used to analyze the effect and relationship between leadership competencies and research and development practice, purposive sampling techniques was used for the data collection, data were collected through survey questionnaire from 346 participants (teachers and students) of higher education institutions. Data was analyzed through descriptive analysis and correlation and regression tool to analyze the hypothesis. Study explored that leadership competencies have positive and significant effect on research and development practices for teachers and students in higher education institutions of Pakistan. Leadership provides healthy platform, resources and mentorship for the research and development.
Keywords: Leadership Competencies, Research and Development, Sustainable Development, Quality Education and Higher Education.

INTRODUCTION
Education is a backbone and soul important for the socio economic advancement of the country, World constantly tried to develop and reform the educational policy for curriculum, assessment and evaluation and management and supervision of educational institutions to raise standards for the accomplishment of goals and objective the educationleaders' (Shah, et al., 2025; Ahmad et al, 2021).Government and institutions persistently emphasized on educational reforms through fair and transparent accountabilitythrough well-developedmonitoring and evaluation mechanism and financial management for the quality control in educational institutions at all levels (Phulpoto, Oad, & Imran, 2024; Gupta, 2020). Reformation of educational policy and research and development mechanism culminated the leadership

portfolio to establish the well suited education system for the public of the state which cater the need and necessity of individual and state mutually to achieve the milestone in socio economic aspects such as development of industries, advancement of technology, economic inclination and widened the trade and commerce (AICTE, 2020).Educational leadership broadlyfocused institutional environment, teachers' performance, assessment & evaluation standards and research orientedteaching learning to meetstandards of outcomes of students' performance(Ahmed, Alwi& Akhtar, 2022; Raja, Akhtar & Hussain, 2020). Effective educational management highly emphasized on knowledge management and technical and research skills for the teachers and students to sustain the scope of education with the changing and transformative trends of the business and technological market (Rafique, K., & Khan, 2024; Yasmeen, Khan & Imran, 2024). Institution foster the modern techniques and trends in curriculum, teachinglearning practices and evaluation mechanism to meet the standard of modern education and access the wide range of national and international recreational platforms for the teachers and students (Nawaz, et al., 2024; Aggarwal K. K, 2020).

Research Objectives
1. Analyze leadership competencies and research and development practices for quality education at higher education institutions
2. To examine impact of leadership competencies on research and development practices for teachers and students at higher education institutions

Research Questions
1. What are the leadership competencies and research and development practices for quality education at higher education institutions?
2. What is the impact of leadership competencies on research and development practices for teachers and students at higher education institutions?

Hypothesis Ho
Leadership competencies have significant effects on the research and developmental practices for quality education at higher education institutions of Pakistan.

REVIEW OF RELATED LITERATURE
Leadership is an important aspect of organization which supervises the overall process of organization such as set mission and vision for the organization, develops the plans strategic and technical plan for the accomplishment of goals and objectives(Kayani, et al., 2023; Khan & Khan, 2020). It manages the required resources such as material and human resources for the organization, coordinates the efforts of employees and communicate with government and other related stakeholders(Khan, Khan &Waqas, 2025; Rafique& Khan, 2024). It develops the financial structure expense and expenditure through budgeting and accountability mechanism and motivates the administration and teams to accomplish the tasks of an organization to achievethe timely goals and objectives (Imran & Akhtar, 2023; Johari et al, 2022). Leadership in education institution plays significant role to integrate the resource and optimal utilization of those resources, it providesfacilitation to teachers and students regarding implantation of education policy and curriculum(Nawaz, et al., 2024; Chen et al., 2020). Education leadership highly focuses the outcome and standard of the quality education; it provides research and technical guidance to teachers and students to achieve the better results through research and development. Institutional leadership fosters the scientific and research sensibility and appreciates the finding for the betterment of the state and society (Kwiotkowska, 2021).

Key Leadership Competencies
Leadership competencies play vital role for upbringing the organization and moral of the employees, integrate the employees and convert them into the team and provide mission to accomplish(Bashir, Saba & Hussain, 2023; Fatima, & Saba, 2020; Fatima, et al., 2020). There diverse leadership competencies are highly demanded for the organization specially in education institution such as Self-management is core responsibility of the leadership through which it regulates the behavior, though, intelligence and

emotion (Gopinath 2020).Self-management is a sense of responsibility to manage time, skills, stress, motivation and personal professional development time to time. According to the Azhar, Iqbal and Imran (2025) interpersonal and intrapersonal communication is soul of leadership responsibility, it an essential skill to communicate with team, stakeholders and policy make to disseminate the policy and agenda and transformation in goals and objectives of the organization. Leader knows the art to follow the ethical consideration and social responsibility. Leadershipencounters the several problem issue and problem routinely and tries to resolve it through innate potential and dealing skills (Nita et al, 2023). Leadership competencies like managerial and technical competencies play significant role for the development of the plan, utilization of resources and dealing with public in critical situation. His technical sense is quite helpful to bring out the organization from the crises and hard times. Effective leadership delegate the roles and responsibilities to team and task force whereas in education institution education administration assign task and allocate the portfolio to teachers and non-teaching staff and monitors the their performance in order to improve it on time to save the institution from the grave crises(Gopinath 2020).Organizational leadership design the induction training and professional development program to enhance the professional competencies of the employees, school management design the pre service and in service training for the teachers to disseminate the modifications in policies and curriculum so that they might incorporate the teaching contents and strategies(Shah et al., 2023; Haq, Bilal, and Qureshi (2020; ulHaq, 2019). Motivation is utmost function of the management whether it is corporate organization or education institution, leadership strives to motivate the teachers through monitory benefits, professional development and allowances for their service. Government revises the befit for the teachers and other staff annually and quarterly (Dirani, 2020).

Key Leadership Competencies
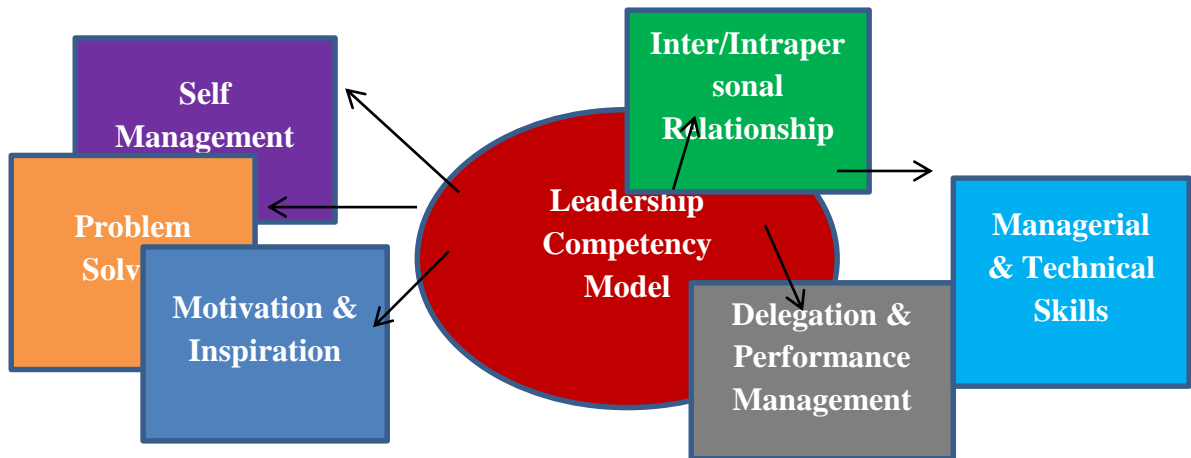
Research and Development Practice in Higher Education Institutions
Education leadership facilitated the teachers and students with moderntechnologicalequipment for the research and experimental studies, institution establish laboratories, computer labs and incubation centers for the skill development of students (Banu, 2022).Technological experts and engineering mentors train them for the analysis of land structure, fertility of agriculture, water and irrigation pattern, health and

transportation science so that students might enhance the advance and technical skills to sustain the market need and demand to accomplish the bright career in the technologicalmarket (Aslam, Rasool, & Khan, 2025; Ashraf, Khan, & Mahmood, 2025; Imran, et al., 2025; Miller and Berk 2020). Institution flourishes the research and development skills among the teachers' students which areessential for the career and professional life of graduates and post graduates students such as,

Personal skills for Research & Development

Higher education institution highly focused personal development and research skills of the students because the government and business organizations intensively target the professional skills and job competencies from the graduates and post graduates (Schröder et al, 2022). After completion of their degree program the their professional life and career are based on the technical and research oriented abilities such as business and marketing skills, testing and diagnostic abilities and mining and surveying potential etc.(Ashraf, Khan, & Mahmood, 2025; Imran, et al., 2025)which multiply the experiences of the individual and develop the field expertise to execute the career in the prior field (Danziger 2020).

Research Analytical Skills

Research and technical writing skills are highly demanded and needed in the job and professional market so educational management observed the demand and need of the job market and explore the results of a great number of students who are unemployed due to non-technical and non-professional in their field despite have degrees such as information techno operation skills, software and application knowledge, data mining techniques, data analysis and data collection abilities (Ullah, 2020).

Business and Communication

Higher education institution prepares the graduates and post grade through research and professional education about the market research, contemporary trend of the market, marketing skills and salesman abilities enhance the business and industry and cater the need and demand of the market (Heikkilä et al, 2020).Business and communication skills are necessary to execute the business, a manager and marketer deals with people and customers and he tries to meet their demand and satisfies them with products and services, Interpersonal and intrapersonal skills are necessary for the students to deal customersand other stakeholder to deliver the policy and decisions (Thiem, Preetz, and Haberstroh 2020).

Data Analysis and Data Mining Skills

Although the research study is compulsory for the students and mandatory complete the research credit hours for final degree. It deals with scientific research and technical skills to execute the project (Vinay, 2024).Students are taught the procedure of data collection and data analysis through technological tools such as SPSS, AMOS, AI, Qlik, and ENVIVO. They are taught to run the data and mechanism for analysis and display it into the meaningful context so that he may justify it the defense and educational conference (Youssef, 2022).

Education institutions provide the platform to explore the advance knowledge through research project and research writing in diverse fields such as medical sciences to explore the anatomical functions, taxonomical activities in human body and discoveries of dysfunction causes the diseases and disorder in human body, it facilitates to explore the hidden energy reserve, cultivation method and irrigation pattern for the barren areas (Azhar, 2024; Verma et al, 2021). Effective institutional management provides free and common access of internet to students at campus and residence so that they use technology for the exploration of advanced knowledge related to their field. Furthermore institution provides free access of computer lab with internet access for the teachers and students and provided the free access of the technological application such as SPSS, AMOS. KNIME, Tableau, Qlik ENVIVO etc for the data collection, categorizations and analysis of the data to make it the meaning full studies. Teacher provide the counseling for the research and developmental studies to students such as provide the field and problem for the studies, group task and project for the requirement of the weightage of the degree program. Most of the higher education institutions provide the information technological and software engineering field for the teachers and students(Trust & Whalen, 2020). Higher education institutions have made the compulsory for the

graduation, post-graduation and doctorate students to work on the research project and complete the research studies credit to meet the criteria of the research study defense to justify the problem, mechanism of data collection and pattern of the students and recommend the use and implication of the study for the welfare and prosperity of the state and public(Li et al., 2020b; Rai et al., 2021; Li et al., 2022a).Effective education management largely contributes the economy and stabilityof the state because it create the task force of doctors, engineer and policy makers for the development of the country, it facilitates the require resources and instrument for the medical and technologicaleducation so that students might practically learn through self-experimentation in laboratories and utilized the learning knowledge for the betterment of society and public to remedy them from the sufferings like hunger, diseases and shortage of water capacity (Azhar, 2024; Jahani et al, 2023).

Quality education refers as the standard of national and international educational discourse, according UNESCO, 2000 EFA quality education addressed the six differentgoals to improve the quality of education and ensure the excellence, recognized and meets the measurable learning outcomes for education. Quality education goal are set criteria at international standards such as 1. Focused on early childhood education, 2. Free and compulsory primary education, 3. Life skills learning, 4 achieve 50% adult literacy, 5 gender equality through education, 6. Ensure quality of education. Quality education is grave matter of discussion at different forums at international level; it universalized the similar footprint in education at school, college and university levels(Sarfraz, Raja, & Malik, 2022; Raja, Raju, & Raja, 2021; Sarfraz, Raju, &Aksar, 2018). Quality education is great challenge for the underdeveloping countries and they instructed and financed by international donor agencies to meet the educational standards (Saini1, 2022).Higher education institutions have set the criteria for the quality education such as course work and research work/project for the under graduates, post graduates and doctorates students. Teachers are provided NOCs for the higher education and professional certifications furthermore they are provided induction training and faculty development programs so that they enhance the teaching skills and research knowledge in their respectivefields. Higher education institutions in Pakistan focused the sustainable development included research& development, assessment and evaluation technique, professional development and performance management (Rashid, 2021). Research and development in the field of social sciences, agriculture and engineering, management sciences and medical sciences addressed the day to problems and issues and justified the solution for those hurdles and issues through implications of the finding of research studies (Burgos & Ivanov, 2021).

RESEARCH METHOD

Quantitative research method is appropriate to explore the impact and relationship between the variable, it widely analyzes the relationshipintegrated factors with observed variables through the scientific analysis tools and techniques (Mezza et al, 2024). Study was based on impact of leadership competencies on research and development practices for sustainable development for quality education in higher education institutions therefore it is quantitative in nature so it explored the impact and relationship between the variables. Causal effect design was used for the study. Data were collected through purposive sampling, population of study 35000 teachers and students of 46 public sector higher education institutions of Pakistan, Morgan sample size technique was use to collect from the targeted population, data was collected from 346 participants (Teachers 126 and 220 student) of 5 public sector higher education institutions of Pakistan. Data was collected through the adapted survey questionnaire, there were two research tools used for data collection 1. Leadership competencies tool (John Smith) and 2. Self-assessment& research skills (Meerahet al.2012). Consents were distributed among the participants and assure them for protection and privacy of their data. Data were collected physically from 116participants including 26 teachers' 90 students and data were collated through Google form from 229 participants including 100 teachers and 129 students of higher education institutions. Data was analyzed through the two different analytical tools of SPSS 22 1. Descriptive analysis 2. Correlational and Regression test and interpreted the tubular portrait of data into meaningful context.

RESULTS AND FINDINGS OF THE STUDY

Study was conducted through quantitative pattern therefore data were collected and analyzed through quantitative tools like descriptive statistic, regression correlation analysis. Study analyzed the impact of leadership competencies on research and development practices for sustainable development for quality education at higher education institutions of Pakistan. Data was analyzed and hypothesis was tested and interpreted into meaningful context through tabular design and those tabular patterns were interpreted.

Table NO.1 Leadership Competencies on Research and Development Practice for Teachers and Students

Variable	No. Participants N	Mean M	Standard Deviation SD
Leadership Competencies	346	3.91	0.58
Research and Development Practices	346	4.19	0.43

Table shows the descriptive metric for the impact of leadership competencies LC on research and development practicesR &D among the teachers and students, responses of 346 participants were analyzed through descriptive analysis test in which mean score M 3.91 and standard deviation SD 0.58 were calculated for the leadership competencies whereas mean score M 4.19 and standard deviation SD 0.43 were calculated, According to first objective of the study to that leadership competencies and research development practices among the teachers and students reflects that leadership competencies such administrative abilities, communicative skills, interpersonal and intrapersonal skills and monitoring and evaluation activities have significance contribution research and development skills among teachers and students. Leadership competencies focus the technical and logical skills development in teachers and students. Institutions leadership provides all required facilities and resources to enhance the analytical and logical skills among the teachers and students.

Table NO. 2 Correlations between Leadership Competencies and Research & Development Practices

Variables	No. Participants N	Coefficient (r)	P-value
Leadership Competencies	346	0.95	00
R & D Practices	346	0.98	0.01

Table shows the relationship between leadership competencies LC and research and development practices R&D analyzed through the correlational and regressionanalysis. 346 responses of the participant were analyzed through regression and correlation, coefficient r= 0.95 and p value 00 for the leadership competencies whereas r=0.98 and p-value 0.01 for research and development practices R & D indicate significant and positive relationship between the leadership competencies and research and development skills among the teachers and students. According to objective one the leadership compactions have the positive and significant relationship with research and development practice sat higher education institutions. Institutional leadership prioritizes the technical and digital skills growth and development for the teachers and students because higher education institution status and reputation is based on the research and analytical abilities of teachers and students.

Table No. 3 Pearson's Correlation Coefficient

Variables	No ParticipantsN	Coefficient(r)	P-value
Leadership Competencies	346	0.82	0.01
Research and Development Practices	346	0.94	0.01
Sustainable development for Quality education	346	0.84	000

Table indicates the correlation metric which analyzed the relationships between the core variables (leadership competencies, research development practice) through the responses of 346 participants. Finding reflectedthat correlation coefficient r=0.82 and P-value 0.01 for leadership competencies whereas r=0.94 and P-value 0.01 for research and development practice R& D and r=0.84 and P-value .000 indicated the there is strong significant relationship between leadership competencies with research and development practices and sustainable development for quality education revealed a very strong positive and statistically significant association. According to objection second that leadership competencies have positive relationship with research and development practices for teachers and students and higher education institution. Leadership take saturated efforts to maximize the research and development abilities of teachers and students. This indicates that initiatives or competencies related to sustainable development are closely tied to achieving quality education outcomes.

Ho Hypothesis

Table indicates the correlational coefficient metrics r=0.82 and P-value 0.01 for leadership competencies and r=0.94 and P-value 001 for the research and development practices whereas r=.0.84 and P-value 000 for the sustainable development for quality education. Result value of correlations coefficient (r) found least at the standard and P-value 000 rejected the null hypothesis and analyzed that there is strong significant effect of leadership competencies on research and development practices for quality education at higher education institutions.

CONCLUSION

Study analyzed the leadership competencies such as managerial competencies, decision making, communication, monitoring and evaluation and inter & intrapersonal competencies are essential for the institutional leadership specially for the educational leadership of higher education institution. Study examines the impact of leadershipcompetencieson research and development practices in teachers and students of higher education institutions. Quality education in higher education institutions is as essential aspect for the skills development of teachers and students because research and technical skills are essential for the professional education and market demand for the qualified teachers and graduates. Public sector higher education institutions do not focuses the practical skills, experimental knowledge an field knowledge for the teachers and students therefore teachers do not have sufficient skills to impact the practical education such as marketing and business skills, diagnostic and technical skills and digital skills in the result the quality of education is largely sacrificed in higher education institutions. Most of the institution neither provides theoretical knowledge and subjective education which is not sustainable neither for quality education nor meet the demand of the job market. Research and development skills such as practical competencies, filed work, experimental abilities which are necessary for the graduates and post graduates of medical, engineering, management, IT and agriculture fields. Higher education institutions deal professional education and practical knowledge rather theoretical and subjective competencies because the quality education of higher education is based on research based skills and competencies which is required in job market and trend of competitive environment. Government and private organizations focus the professionalknowledge and filed expertise of graduates and post graduate so they may evaluate their skills and practical competencies related to job.

RECOMMENDATIONS

1. Government needs to enhance the leadership competencies of education leadership specially the leadership of higher education institutions because the quality and success of the education institution depends upon the leadership competencies of an individual.
2. Leadership should highly focus the technical and analytical skills and competencies of teachers and provide them scientific labs, computer labs and access of the modern application so that teachers and students may participate for innovation and transformation in their field.

3. Leadership should reduce the culture of theoretical teaching learning and switch it towards digital and practical skills and development of students so that they may meet the market demand of technical task force for government institution and industries.

4. Higher Education Commission Pakistan should revise the curriculum and courses and make it practical and analytical so that it may cater the professional demand of the human resources development industry.

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