Management and Leadership in Higher Educational Institutions: The New Normal (Post-COVID-19) and Future Scenario

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A R T I C L E I N F O	A B S T R A C T
	Purpose: The impact of COVID-19 on education management and leadership, particularly in higher educational institutions, has been significant. These institutions used to offer in-person education before the pandemic. Due to the COVID-19 pandemic, HEIs were compelled to temporarily close or transition to online classes. The situation divided the world of education into two clear categories: those with sufficient IT resources to fully support online education and those with limited resources that could only partially do so. Countries that have well-established internet infrastructure are able to operate more efficiently compared to those that experience frequent disruptions. **Method:** This study utilised a mixed-methods approach. Questionnaires were distributed to collect primary data. A total of 367 universitiesfrom Asiancountrieswereincluded in the sample, out of a total of 5984 universities. Data from the IMF, United Nations (UN), and World Bank was collected for this study. The study employed SEM analysis using PLS SMART software to analyse the variables.

Findings: With the assistance of IT, students encountered a lack of in-person interactions due to both full and partial support. Students who had limited access to IT resources encountered greater challenges. Efficient management of online education requires adeptness in agile management and leadership. Thus, the success of universities differed based on managerial expertise, leadership, and utilisation of IT. Currently, we find ourselves in the post-COVID-19 era, where there has been a significant shift towards on-campus education, as well as a combination of online and in-person learning modes. **Implication of Research and Practice:** The study suggests that effective management and leadership are crucial for ensuring quality education, with technology playing a significant moderating role. The future of education lies in a hybrid model that effectively incorporates IT.

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1. Introduction

1.1 Education Management and Leadership under COVID-19

Regarding the global health crisis, the onset of COVID-19 caught most people off guard, as it was a completely new experience for them. It had an impact on various aspects of society, such as people's lifestyles, their beliefs, and their ability to balance work and personal lives. Among all such kinds of socio-economic activities, the education system was hit at an extreme. The management and leadership of educational institutions faced a significant challenge in deciding whether to continue or temporarily suspend on-campus face-to-face education. COVID-19 arrived at a time when universities primarily delivered education through in-person classes, particularly in developing countries. Technology was used in a limited and selective manner in the heuristic teaching method and flipped class environments. The universities' management, faculty, and students were taken aback by the unexpected lockdown conditions at the beginning of 2020.

In developing countries such as Pakistan, India, and Bangladesh, the lockdown was implemented for specific durations, which were periodically extended. At first, the universities, with only a few exceptions, made the decision to carry on with education using whatever resources they could gather, such as assignments, online lectures, and audio/video recording systems. Over time, universities have embraced online education, adjusting their curricula, teaching methods, and assessment systems. However, they encountered significant resistance from the students and their parents, particularly regarding the quality of lecture delivery methods. The primary argument emphasised the unparalleled value of face-to-face learning and expressed concerns about the potential compromise in the quality of education in online lecture deliveries. After a period of approximately one and a half to two years, online education was finally phased out in spring 2022, and universities were given the green light to resume on-campus education. Amidst the COVID-19 pandemic, the students, faculty, and management quickly adapted to the convenience and flexibility of online education.

1.2 Management of Education in Transition to Post Pandemic

In the latter part of 2021, there was a slight improvement in the situation regarding COVID-19 cases in many countries. Life-supporting activities started to return to a somewhat normal state, albeit with precautions in place. Nevertheless, the gradual return to a more typical state altered the way people viewed and understood society and how it operated. Following the COVID-19 pandemic in spring 2022, the environment of educational institutions underwent a significant transformation that was characterized by lingering uncertainty and the potential for additional outbreaks. Nevertheless, the widespread impact of the pandemic over the course of two years has significantly altered the operations of universities and the administration of academic endeavours within them. During this period, information technology became a prominent tool in the dissemination of knowledge. The impact of this phenomenon on social and economic activities is significant.

Amidst the post-pandemic era, universities are grappling with the complexities of change management in the face of the new normal. This transition involves a shift from a more relaxed online education approach to engaging in interactive on-campus sessions.

The prevalence of technology has encouraged students to pursue learning from the comfort of their homes. Additionally, changes in people's daily routines and the adoption of decentralised learning methods during lockdown or semi-lockdown situations have become well-established practices. Is it feasible to fully revert to the pre-COVID-19 education management practices in higher educational institutions? What developments have occurred in education management and leadership over the past two years? Should we reconsider our university curricula, teaching methods, faculty training, classroom designs, library sizes, computer lab setups, and the role of information technologies and social media in the new normal? These questions require careful consideration from university academics, management, and leadership. The goal of management and leadership in educational institutions is to achieve quality education within the given circumstances. Receiving a quality education not only leads to compatible employment, but also helps you become a valuable member of society.

2. Problem Statement

2.1 Continuity of Education under Situations like COVID-19

The management of educational institutions has a significant impact on the quality of education. A well-managed and properly guided setup has a higher likelihood of achieving success. Online education uses technology to facilitate communication between students and teachers across long distances; clearly, there is a cost associated with it. The importance of management and leadership is heightened when uses technology to achieve quality education, despite the limitations of lacking interactive learning. The established role of technology in normal classroom environments is widely recognised for enhancing learning and comprehension. The online mode of education necessitates a complete reliance on technology. Online education primarily consists of the teacher, student, and the medium of communication. Amidst the COVID-19 pandemic, educational institutions in Pakistan swiftly implemented their learning management systems. Similar practices were also implemented in various developed and developing countries worldwide, including those in Asia. Some students and parents have expressed concerns about the quality of lectures delivered by faculty members and the effectiveness of online mechanisms, including assessment systems. It is crucial to thoroughly analyse these concerns regarding the future implementation of online education, particularly in countries that lack adequate IT infrastructure.

2.2 The Issue for Investigation and Reference

Considering the lack of previous instances of widespread reliance on online education, there is a noticeable gap in assessing its effectiveness and making informed predictions for the future. The consideration of developing countries in Asia is relevant due to the similarities in the scenario observed in Pakistan. The primary objective of this analysis is to examine the impact of an IT-dependent Learning Management System (LMS) on the effectiveness of online education in terms of quality. The effective management and leadership of universities are crucial in establishing the necessary infrastructure, fostering faculty development, and providing guidance to students. Thus, the cost associated with acquiring and implementing technology for the transfer of knowledge and skill development underscores the crucial role of managers and leaders in maximising available resources.

It is crucial for researchers and intellectuals to establish a balance in the management and leadership of higher educational institutions in developing countries. It seems that the combination of efficient management and cost-effective use of technology is the key factor here. The current body of research on online education management and leadership lacks sufficient insight into its ability to maintain quality standards over time. Therefore, it would be beneficial to include a more thorough cost-benefit analysis. There is a need to establish clear criteria for deciding whether to continue online education, implement a hybrid model, or return to traditional face-to-face instruction on campus. Similarly, another area to explore is what developing countries should do to successfully deal with such kinds of situations in future?

3. Objectives and Scope of Study

3.1 Objectives

- To examine the relationship between 'Education Leadership' and 'Education Quality', and that of 'Education Management' and 'Education Quality'.
- To examine the moderating effect of 'Technology Application' on the relationship between 'Education Leadership' and Education Quality, and that of 'Education 'Management' and 'Education Quality'.
- To determine the need of technology in education management and leadership in 'New Normal' and beyond under financial constraints especially in developing economies of Asian countries.

3.2 Scope

This paper explores the Asian perspective on education management and leadership in the 'New Normal', emphasizing the importance of sustainable quality education achieved through the effective use of modern technology-based learning management systems.

4 Literature Review

4.1 Management of Educational Institutions and Emergence of COVID-19

Efficient operation of educational institutions is crucial for effective management of education. An institution reaches a level of proficiency when it achieves a favourable input-output ratio, where the output exceeds the inputs. As per Bolam (1999) perspective, the management of educational organisations is primarily an executive function. In Sapre (2002) perspective, management involves a set of activities aimed at efficiently and effectively utilising organisational resources. As per Bush and Jackson (2002) point of view, educational management should prioritise the fundamental purpose of education. Thus, educational management has a dynamic outlook to ensure high-quality results. This management philosophy of educational organisations is grounded in the concept of 'purpose'. Effective management of education, whether it's through traditional in-classroom methods or innovative online approaches, relies on achieving positive input-output ratios. Dealing with the impact of the coronavirus outbreak on educational institutions was a sudden and unexpected challenge that arose towards the end of 2019.

Due to the anticipated negative outcomes, many university administrations have chosen to temporarily halt in-person classes and await a return to normalcy. In Pakistan,

there was a decision to temporarily suspend all on-campus education for a period of two weeks. However, it has become evident that the virus will require more time to dissipate. As a result, it is not feasible to keep the universities closed indefinitely. In developing countries like those in Asia, the options available included online real-time classes, assignment-based activities with limited internet access, and, in some cases, the use of mobile phones. Students experienced psychological stress, uncertainty, disconnections from friends, and disruption of counselling services as a result of these practices (Zhai & Du, 2020). Universities' management addressed the challenges by implementing various measures, such as adjusting course content, revising study plans, maintaining student engagement through multiple communication channels, providing online career counselling, and conducting assignment-based assessments.

Nevertheless, activities such as internships, research projects, and hands-on lab work have posed persistent challenges (Zhai & Du, 2020). Universities have developed novel approaches to assist students with their research projects and capstones, ensuring they meet the necessary graduation criteria. Due to uncertain circumstances, universities made the decision to transition to online education using the available resources. In developing countries of Asia, such as Pakistan, addressing the management of inadequate information technology resources, support infrastructures, faculty training, student counselling, and parental motivation for off-campus education posed significant challenges. The management exerted additional effort to address the challenges. Student and parental satisfaction hinged on the students' understanding of the material and their ability to engage with their peers and teachers. Unfortunately, this was not feasible in the off-campus mode of education. The administration needed to increase the amount of time teachers spent online with students during discussion and interactive sessions. Under lockdown conditions, teachers had to adapt their pedagogy to effectively teach online.

4.2 Role of Leadership in Educational Institutions under Coronavirus

There are varying perspectives on how leadership is defined within educational institutions. Accordingly, the terms like education administration and management form contextual part of leadership. Therefore, education management and leadership are closely intertwined, as leaders and managers often exhibit similar qualities to varying degrees. Whereas transformational leadership is more prevalent in national contest, managerial leadership with administrative acumen attains prominence in educational perspectives (Bush, 2018). Leadership, whether transformational or managerial inherently involves exertion of influence in accordance with the personality traits of individuals. In the management of educational institutions, those in leadership positions demonstrate their abilities to exert social influence over the team members to guide their actions towards a specific goal. Leaders in educational institutions play a crucial role in shaping the behaviour of others through their proactive approach and willingness to take risks. At the same time, managerial leadership relies more on professional skills as compared to transformational one. Gronn and Ribbins (1993) assert that leadership is primarily determined by the character of leaders, encompassing their values and moral capacities. Day, Harris, and Hadfield (2001) argue that effective leaders possess strong personal and educational values. Under all perspectives of varying leadership shades, 'vision' provides the conceptual base for defining and attributing effectiveness in institutional management.

Based on a study conducted by Dinham and Scott (1998) on Australian schools, it was found that a significant majority of teachers and parents, specifically over 95%, had high expectations for educational leaders in terms of their ability to plan and successfully implement a vision. Given the extensive discussions surrounding educational leadership, it is widely acknowledged that vision plays a crucial role in determining success. To provide a concise summary of the varying perspectives of leadership in educational institutions, it is important to consider the influencing processes, character and vision of the leader for a smooth progression of events, an action-oriented attitude, and proactive planning. Here's what occurred when the necessity arose to swiftly transition from traditional classroom instruction to online education during the COVID-19 lockdown. Educational institutions in developing countries of Asia, such as Pakistan, swiftly transitioned to online teaching for continuity and sustainability, thanks to their proactive acumen and visionary leadership. The leadership of educational institutions has a tremendous potential for innovation in the face of challenging circumstances such as the COVID-19 pandemic. Technology plays a crucial role in the leadership of higher educational institutions, particularly in information management and decision making.

Over the past three decades, digital technologies have greatly accelerated the speed at which knowledge is shared and skills are developed in educational institutions. In the past, books were the primary source of knowledge and acted as the sole medium for learning. However, with the advent of the internet and social media, information has become easily accessible to everyone, constantly updated with the latest developments. The book and the teacher were both compelled to redefine their roles within the broader domains of education. Online education, heavily reliant on technology, is a growing trend that will continue to shape the future. Academic institutions, just like any other organisation, encounter various challenges that require timely solutions for their efficient operation and success. The role of a leader is crucial during times of crisis to ensure the continued functioning of institutions. It also affects students' leadership skills to navigate challenging situations with poise (Antonopoulou et al., 2021).

In today's digital era, leaders who possess a strong understanding of technology can anticipate the future and make informed decisions. The swift transition to online education by agile leadership in higher educational institutions during the onset of the coronavirus pandemic was evident. A study conducted in the United Kingdom has explored the use of a cybernetic model as a potential solution for effective management and leadership in higher educational institutions (Davies, Hides, & Casey, 2001). COVID-19 presented a challenging situation for effective management and strong leadership, particularly in developing countries with limited resources.

4.3 Education Management and Leadership for Proficient Outcomes

In recent decades, management and leadership have become subjects of great interest among administrators and academicians. Bolam (1999) have strongly emphasised the significant role it plays in achieving effective outcomes. Their managerial approach has brought a more scientific perspective as well as implementation to the field of education management. Education administrators and academicians widely agree that effective leadership plays a crucial role in facilitating the transfer of knowledge and the development of skills. The establishment of the National College for Education Management in the UK was the result of these studies. The focus was on improving the leadership of principals in schools. Despite some limitations, the concept highlighted the

need for its integration into the future education system. In 2002, Tony Bush and David Jackson embarked on a journey to seven different countries. Their goal was to assess the significance and value of education management and leadership. It was noted in the visit report that in Canada and most parts of the USA, obtaining a master's degree in educational administration is a requirement for being appointed as a principal or vice principal.

It is widely recognised that principals must possess the necessary knowledge, skills, and understanding to effectively lead educational organisations in today's globalised environments. Learning centred leadership also includes qualities of management. Strong leadership and effective management are crucial for education systems to successfully meet their intended goals. Managers and leaders in education utilise technology as a tool to achieve proficient outcomes. Technology empowers us with physical strength, coordinates seamless operations, and introduces automation into our daily tasks. In the field of education management, technology has the potential to enhance connections between teachers and students. It is possible to acquire and impart knowledge more efficiently. It can enhance learning through simulation or by providing artificially created hands-on tools. In today's world, technology enables seamless networking for integrated learning, breaking down the barriers of distance.

According to a report on 'Reimagining the Role of Technology in Education' by the US Department of Health and Human Services Oral Health Strategic Framework (2014–2017, 2017), there has been a change in focus from debating the use of technology in education to exploring how it can enhance learning and provide equal educational opportunities for all students. Given the increasing focus on personalised learning, it is crucial to provide students with a range of options for leveraging technology to maximise their educational gains. Teachers' training on the use of technology is crucial for the success of 21st century education, as it helps them gain experience and confidence. Significant progress has been made in the use of technology in education management to ensure that all schools have high-speed classroom connectivity for learning innovations, according to the report. Technology has prompted a re-evaluation of our approach to designing physical learning spaces and fostering connections between learners, teachers, peers, and mentors in educational institutions.

To maximise the benefits of technology in education, it is crucial to have strong leadership that can foster a shared vision and to meet the demands of modern education, it is crucial to have leaders in educational institutions who possess the ability to delegate tasks and effectively communicate innovative ideas (Adesanya et al., 2016). Technology is considered a valuable tool for facilitating the transfer of knowledge. On its own, it does not have the power to completely revolutionise the learning experience. However, it does play a role in facilitating the process of transformative learning. Education leaders must possess personal experience in utilising technology for learning and be skilled in effectively utilising technical resources. Technology plays a crucial role in both education management and leadership, enabling the effective use of existing resources and anticipating future changes. When considering the Asian perspective, there is significant variation both between countries and within countries in terms of the education systems they employ.

4.4 Online Education

Distance learning has a long history, evolving through various modes such as instructional letters, telephone conversations, and now, with the rapid advancement of technology, the internet

has become the primary medium. Learning management systems have revolutionised communication between students and teachers, offering audio and video modes of interaction that have replaced traditional handwriting. The connection between computer keyboards and writing has become inherent, as the latter has become the primary method for creating written content. Web-based teaching and learning has experienced significant growth in recent years, despite students' preference for display boards and visual communication channels (Lloyd, Byrne, & McCoy, 2012).

Institutions of higher learning are experiencing a growing demand for online teaching and learning. During the implementation of online classes during the COVID-19 pandemic, it was noted that the faculty members' expertise in teaching the courses did not align with the requirements and advancements of online education (Bao, 2020). Barriers to effective online learning in developing countries of Asia, such as Pakistan, encompass interpersonal, institutional, training, technology, and cost domains (Lloyd et al., 2012). The limitations of the system include intermittent internet connectivity, interruptions caused by adverse weather conditions, and inadequate IT infrastructure.

4.5 Cost of Technology and its Usage

During the onset of the COVID-19 pandemic, the financial burden of online education posed a significant challenge for both universities and students. Universities successfully secured additional funding with the help of both national and international support. The availability of the same for students was quite challenging due to frequent power outages, delays in restoration, and the added expense of computers and related accessories. The allocation of financial resources to implement technology in online education was a particular concern for educational institutions in developing countries. The stakeholders consisted of students, parents, faculty members, and owners of educational institutions in both the private and public sectors.

Private and public sector educational institutions in developing countries differ significantly in terms of student enrolment, faculty composition, and availability of necessary infrastructure. Similarly, their approach to management and leadership stands out in their development of curriculum, teacher training, infrastructure enhancements, adaptation to technological advancements, and decision-making procedures. The cost reduction was achieved by minimising spending on other social programmes, ensuring adherence to the minimum required standards. Amidst the intricate situation and uncertain future brought about by COVID-19, leadership plays a crucial role in guiding the progress of addressing educational needs, challenges, and opportunities. Nevertheless, it has provided valuable insights for developing nations to effectively address similar situations in the future.

5 Research Methodology

5.1 Research Design

The paper primarily relies on primary data and adopts an explanatory research approach. The current situation (under discussion) involves strict lockdown measures, limited mobility, and reduced opportunities for social interaction due to the ongoing COVID-19 pandemic. The variables examined were the management of higher educational institutions (Education Management), leadership in higher educational institutions (Education Leadership), the Quality of Education, and the Application of Technology in

education (technology application). The management and leadership of educational institutions are considered as independent variables, while the quality of education is seen as the dependent variable. The application of technology is seen as a moderating factor. This study investigates the effects of Education Management (EM) and Education Leadership (EL) on Education Quality (EQ). A quantitative approach was used to test the hypotheses using Structural Equation Modelling (SEM). The data was collected through a survey questionnaire that was adapted from existing literature. According to Hair et al. (2016), it is recommended to utilise Partial Least Square Structure Equation Modelling (PLS-SEM) for the examination of intricate structural models. Therefore, this study has adopted a similar approach. Here is a basic theoretical model:
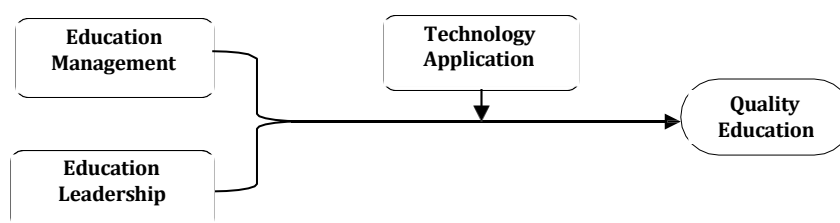
5.2 Data Types and Collection

The primary data source consisted of universities from various Asian countries. A sample size of 367 was selected from a total population of approximately 5984 universities. The sample was chosen with a confidence level of 95% and a margin of error of 5%. Data collection was conducted using an online questionnaire. The participants in the study consisted of students, teachers, university administrators, and parents. The secondary source of data includes information on the GDP of Asian countries, per capita income, spending on education as a percentage of GDP, and population. This data was obtained from reputable financial institutions such as the World Bank, UN, and IMF, and is publicly available on their websites (attached at the end of the paper).

5.3 Demographic Summary

Below is a table that presents the profile of respondents, including the frequency and percentage of participants. We assumed that the respondents have the necessary knowledge to accurately evaluate and answer the questions. Table 1 presents a concise summary of the demographic information.

6 Analysis and Results

The analysis and results inferred out of the quantitative method are given below.

6.1 Structural Equation Modelling (SEM)

The PLS-SEM model is divided into two sub-models for assessment: the measurement model and the structural model. The measurement model evaluates the assumptions of internal consistency and validity, while the structural model examines the research hypothesis. Below is a comprehensive analysis:

6.2 Assessment of the Outer-Model

The research framework discussed in this study is a reflective model. According to Ramayah et al. (2018), there are three criteria that need to be considered when assessing a reflective model: internal consistency, convergent validity, and discriminant validity. For internal consistency, it is necessary for the Composite Reliability (CR) to fall within the range of 0.6 to 0.95 (Ramayah et al., 2018). Below given is Table 1 reflecting attributes and respondent details. Accordingly, based on these details, Table 2 reflects all variables meeting the threshold value of CR. The table also presents the values for Composite Reliability and Average Variance Extracted in the context of SEM.

Table 1

Attributes and Respondent Details / Summary of Demographic Information.

Attributes	Respondent Details	Frequency	Percentage
Gender	Male	262	73.6
	Female	94	26.4
Age Range	22-30	20	5.6
	31-39	51	14.3
	40-48	174	48.9
	49 and above	111	31.2
Experience (Years)	(01-03)	8	2.2
	(04-06)	35	9.8
	(07-09)	46	12.9
	(10-12)	34	9.6
	(13 and above)	233	65.4
Education	18 years	75	21.1
	Above 18 years	143	40.2
	Below 18 years	138	38.8
Designation	Academic	17	4.8
	Assistant Professor	109	30.6
	Associate Professor	56	15.7
	Dean's assistant for quality affairs	16	4.5
	Head of the Department	37	10.4
	Instructor	2	0.6
	Lecturer	34	9.6
	Professor	32	9.0
	Senior Lecturer	36	10.1
	Vice Rector for education affairs	17	4.8
Departments	Accounting	50	14.0
	Business Studies	76	21.3
	Computer Science	16	4.5
	Department of Education	17	4.8
	Economics	12	3.4
	Hotel and Tourism management	18	5.1
	Humanities and social sciences	21	5.9
	Informatics & Systems	12	3.4
	Logistics Sciences	18	5.1
	Management science	82	23.0
	Marketing	16	4.5
	Mathematics and Statistics	18	5.1

Table 2

Variables Reflecting the Threshold Values.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Education Leadership	0.873	0.917	0.904	0.560
Education Management	0.874	0.875	0.901	0.531
Education Quality	0.697	0.753	0.809	0.521
Technology Application	0.923	0.910	0.942	0.735

6.3 Construct Validity

The construct validity is typically categorised into two types: convergent validity and discriminant validity (Hair et al., 2016). To establish convergent validity, it is important for the outer loadings of the construct to exceed 0.7, while the AVE should be higher than 0.5 (Hair et al., 2016). In recent studies, researchers have included a few items to meet the required thresholds for outer loading and AVE, as suggested in the literature (Hair et al., 2016; Ramayah et al., 2018). Therefore, it is important to establish convergent validity (Table 1). The discriminant validity is an important criterion for evaluating the construct's validity. The PLS-SEM offers Fornell & Lacker's cross loading criterion and HTMT criterion to assess discriminant validity (Hair et al., 2016; Ramayah et al., 2018). According to Table 3, the diagonal values of each variable are higher than their correlated values, as per Fornell & Lacker's criterion.

Table 3

Diagonal Values of Variables with Correlations.

	Education Leadership	Education Management	Education Quality	Technology Application
Education Leadership	0.748			
Education Management	0.318	0.729		
Education Quality	0.316	0.706	0.722	
Technology Application	0.764	0.468	0.534	0.857

Furthermore, Table 4 provided below illustrates the cross-loadings, which indicate that an indicator's loadings on the associated construct should be higher than their loadings in any other construct (Hair et al., 2016). All values in the table satisfy the criteria for cross-loadings. Therefore, the construct's discriminant validity has been established.

6.4 Assessment of the Structural Model

An evaluation of the structural model is conducted to test the hypothesis. When evaluating a structural model, it is important to consider various factors such as path coefficients, hypothesis testing, R2, f2, and Q2. It is crucial to test the hypothesis by examining path coefficients at a specified significance level and P Value. The bootstrapping procedure in SMART PLS yields the path coefficients with significance levels at specific P values. In the present study, two-tailed t-tests were utilised to determine the significance

of the path coefficient. A hypothesis is considered supported if the t-value exceeds 1.96 and the corresponding p-value is less than 0.05 (Ramayah et al., 2018). The results of bootstrapping are presented in Table 4, while the structural model is depicted in Figure 1. The results indicate that both Education Leadership (EL) and Education Management (EM) have a significant impact on Education Quality (EQ). In addition, the application of technology also has a significant impact on the quality of education. Here is the assessment of the structural model.

Table 4

Bootstrapping Values of Variables.

Items	Technology Application	Education Leadership	Education Management	Education Quality
AT2	0.555	0.303	0.559	0.381
AT3	0.924	0.737	0.353	0.455
AT4	0.923	0.748	0.444	0.599
AT5	0.912	0.724	0.404	0.512
AT6	0.895	0.672	0.288	0.316
AT7	0.875	0.659	0.320	0.351
CDGO1	0.521	0.731	-0.044	0.043
CDGO2	0.837	0.816	0.279	0.210
CDGO3	0.274	0.391	0.080	-0.053
FDSP2	0.082	0.57	0.466	0.264
FDSP3	-0.061	0.202	0.115	-0.136
FDSP4	0.025	0.246	0.002	-0.040
IKRI1	0.217	0.588	0.056	0.076
IKRI2	0.235	0.335	0.281	0.299
VMEI1	0.812	0.876	0.358	0.372
VMEI2	0.554	0.834	0.245	0.286
VMEI3	0.707	0.904	0.377	0.482
VMEI4	0.493	0.764	0.222	0.068
CMSF2	0.247	0.211	0.748	0.424
CSLE1	0.433	0.302	0.742	0.690
CSLE3	0.390	0.380	0.213	0.323
CSLE4	0.402	0.414	0.723	0.579
DMT1	0.367	0.127	0.737	0.478
DMT2	0.378	0.353	0.721	0.561
DMT3	0.190	0.170	0.746	0.609
MHMM1	-0.107	0.009	0.496	0.412
MHMM2	0.085	0.004	0.730	0.553
MHMM3	0.633	0.264	0.680	0.601
EQ1	0.315	0.184	0.555	0.843
EQ2	0.539	0.385	0.219	0.549
EQ3	0.422	0.320	0.821	0.784
EQ4	0.341	0.047	0.437	0.675

The analysis of internal consistency, convergent and discriminant validity supports the suitability of the model for hypothesis testing (Table 5).

Table 5

Model Suitability for hypothesis Testing.

Relationship	Path Coefficient	Significance (t-value)	P Values	Decision
Education Leadership -> Education Quality	0.156	3.026	0.003	Supported
Education Management -> Education Quality	0.666	30.128	0.000	Supported
Technology Application -> Education Quality	0.341	6.224	0.000	Supported

Note: *Significant at 0.05
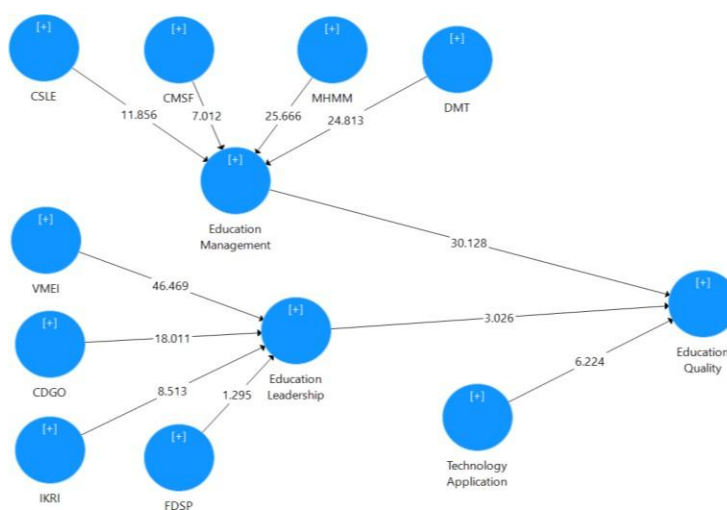
Figure 1: *Structural Model.*

6.5 Predictive Accuracy of the Model

Furthermore, it is vital to assess the model's predictive accuracy by considering the coefficient of determination (R^2) score. However, Hair et al. (2016) advise reporting the adjusted R^2. In their study, Hair et al. (2016) explained the R^2 values of 0.75, 0.5, and 0.25, categorising them as substantial, moderate, and weak indicators of predictive accuracy. The recent study shows R^2 and adjusted R^2 values of 0.650 and 0.647, respectively, indicating a moderate level of predictive accuracy for the model. Once the predictive accuracy has been assessed, it is crucial to evaluate the effect size of the predicting variable using the f^2 values (Hair et al., 2016). Cohen (1988) described f^2 as large, medium, and small effect sizes for values 0.35, 0.15 and 0.02 respectively. The f^2 values or EL, EM and TA are 0.029, 0.986 and 0.12 respectively, this elucidates that Education Management is the large predictor in explaining R^2 of the model. The predictive relevance (Q^2) of the recent model is assessed through the blindfolding procedure by examining the Cross Validated Redundancy (CVR) and Cross Validated Communality (CVC). The values CVR and CVC are 0.309 and 0.226 respectively that meet the criteria of predictive relevance (Hair et al., 2016).

6.6 Moderation Analysis

The model examines the role of Technology Application as a moderating variable between the independent variables and the dependent variable. This study adopts the product indicator approach, as explained by Ramayah et al. (2018) and Hair et al. (2016), to test the moderation. The study introduces two moderating terms. Moderating-EM and Moderating-EL (Figure 2).
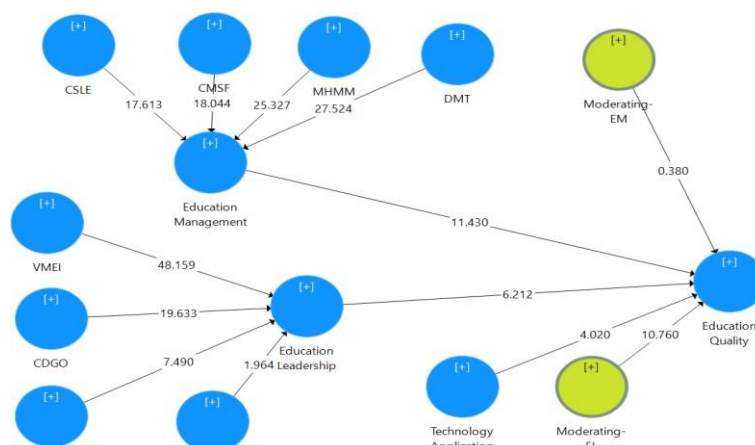

Figure 2: *Moderation Model.*

According to Table 6, the role of 'Technology Application' as a moderator is found to be significant in the relationship between Education Leadership and Education Quality. However, it does not have a significant moderating effect on the relationship between Education Management and Education Quality.

Table 6

Assessment of Moderation.

Relationship	Path Coefficient	Significance (t-value)	P Values	Decision
Moderating- EL -> Education Quality	0.336	10.760	0.000	Supported
Moderating-EM -> Education Quality	0.055	0.380	0.704	Not Supported

Note: *Significant at 0.05

7   Discussion and Conclusions

7.1 Significant Impact of Education Management and Leadership on Quality

The tables present empirical results that demonstrate the substantial influence of education management and education leadership on the quality of education. In addition, the application of technology has a substantial moderating effect on the correlation between educational leadership and the quality of education. Education plays a crucial role in fostering various forms of progress and advancement. For a high-quality education, it is essential to have the necessary financial and intellectual resources to implement

contemporary methods and systems. Improved education leads to increased productivity, efficient service delivery, and enhanced quality of life. The positive results of improved education led to the allocation of additional resources towards education. The cycle continues, fuelling rapid growth and development in all aspects of life in developed countries.

Many countries in the Asian region are classified as developing or somewhere between underdeveloped and developing states. Education plays a crucial role in elevating a country's social, scientific, and technological standards. Investing in higher education is crucial for economic and social development (Barnett & Ceci, 2002). Capital investment in IT plays a significant role in this process. Nevertheless, a significant challenge in the developing countries of Asia is the lack of adequate resources for effectively integrating IT into education management and leadership.

7.2 Structure of Business Education in Post COVID-19 Scenario

The post-COVID-19 period marks a new phase in how society operates and how education, particularly in business schools, is managed. With the increasing adoption of paperless work and virtual currencies, it is imperative to restructure business education in the developing countries of Asia. The hybrid mode of education is characterised by its fast pace, allowing students ample time for studying and practice. As a result, it may be necessary to separate the degree programmes from specific time constraints and instead base them on contact hours or study hours. To adapt to the 'New Normal', it is suggested that business schools transition from solely offering on-campus classes to a more selective online approach. This would allow students to enrol in a greater number of courses per semester. It would predominantly rely on the management and leadership of the business school to integrate IT effectively and efficiently.

7.3 Curriculum of Business Education

An effective curriculum is crucial for the hybrid mode of education to meet specific goals. Additionally, it must be able to seamlessly incorporate computer and information technologies, as well as the knowledge from natural and social sciences. It is advisable to integrate supplementary courses into the main business courses and themes, rather than offering them in isolation or as standalone modules. Effective implementation of the New Normal requires well-trained teachers and the adoption of new pedagogies supported by information technologies. If there are future occurrences of situations like COVID-19, implementing a hybrid mode of education with a redesigned curriculum would allow for a smoother and more efficient transition to online education.

7.4 Blended Education Methodologies

The 'New Normal' involves a variety of approaches in various aspects of life, including the way classes are conducted. Technology-supported flipped classrooms offer effective solutions for hybrid learning. Hence, business education can be detached from traditional classrooms and instead facilitated through mobile phones, allowing students to learn on the go. This approach would also address the issue of student attendance. The social and economic landscape of societies will be affected by this, leading to reduced traffic on roads,

increased study hours for students, and conservation of essential commodities. The utilisation of technology during the COVID-19 pandemic has facilitated the implementation of blended learning.

7.5 Understanding Management and Leadership in Business Schools

The effective functioning of educational institutions relies heavily on the application of technology. However, it is the management and leadership that significantly contribute to improving efficiency and quality. The integration of means with intended outcomes is the reason behind the correlation between management and leadership. In resource-constrained developing countries, the strategic utilisation of information technology can yield optimal results. Diagram 1 presents a practical combination of factors aimed at improving business education in higher education institutions.
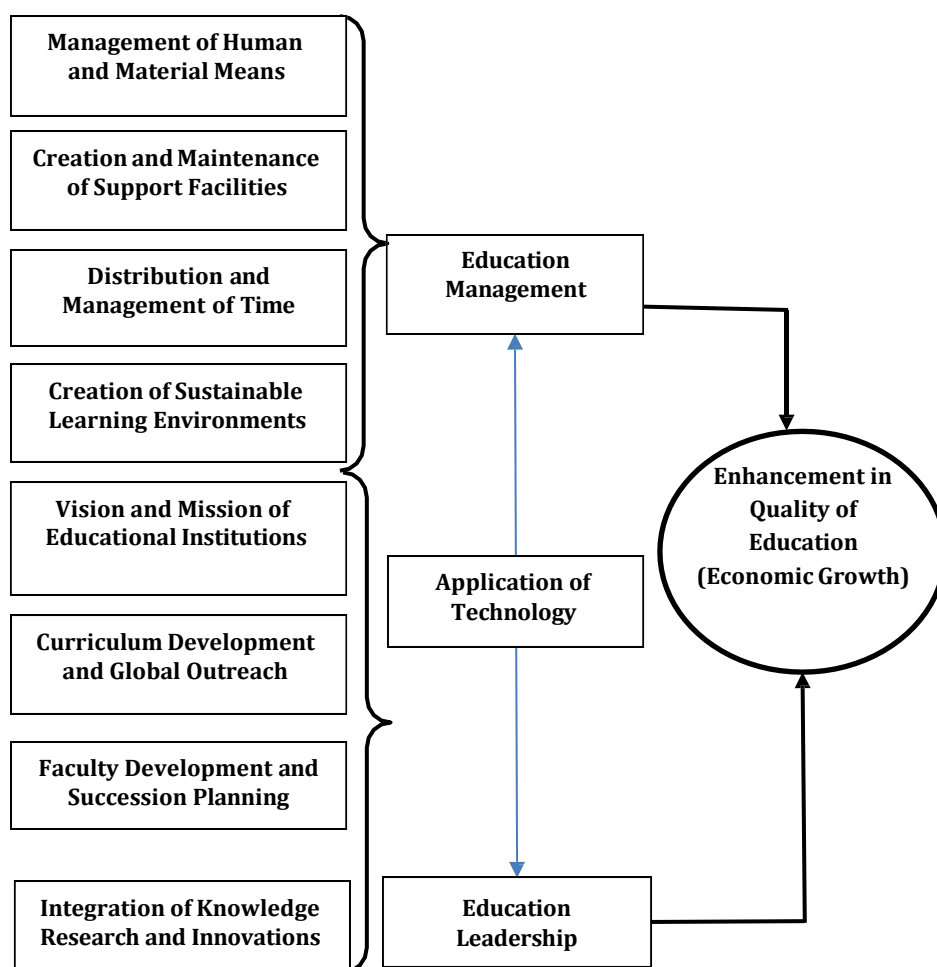

Diagram 1: *Framework of Effective Functioning of Educational Institutions.*

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Questionnaire
Online Conduct of Classes under Lockdown Conditions of COVID-19
Tick Relevant Category): Student, Faculty, Management
Country: _____ **University:** _____

Question-1: Proficient Management of Academic Activities (Prior Planning, Course Designing, Selection of Suitable Teaching Methodology) plays critical role in maintaining quality in online education (tick the desired box): -

| Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |

Question-2: Visionary Leadership of Educational Institutions (Forecasting, Synchronization, Monitoring) is fundamental to compatible quality in online education (tick the desired box): -

| Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |

Question-3: Technology (Internet and Allied Means) plays moderating role in effective education management and leadership in attaining quality online education (tick the desired box): -

| Strongly Disagree | Disagree | Neither Agree nor Disagree | Agree | Strongly Agree |

Question-4: During the recent lockdown in my country, I found the technology (Internet and Allied Facilities) supporting online education as (tick the desired box): -

| Very Insufficient | Insufficient | Neither Sufficient nor Insufficient | Sufficient | Very Sufficient |

Question-5: During the recent lockdown in my country, I found our government's spending in relation with our GDP for provision of internet and allied facilities to students and teachers as (tick the desired box): -

| Very Insufficien | Insufficien | Neither Sufficient nor Insufficient | Sufficient | Very Sufficient |

Question-6: My experience of recent online classes is that we need to improve in following areas for obtaining optimum quality (Give them order of your preference): -

#	Area	Priority 1,2,3 etcetera
1	Proficient Management (Planning and Material Support)	
2	Visionary Leadership (Forecasting and Monitoring)	
3	Effective Learning Management System (Technology)	
4	Teacher's Attitude (Subject Expertise and Communication)	
5	Student's Attitude (Adapting to Change and Time Management)	