University Infrastructure Readiness in Pakistan for Smart Technology-Based Business Education: Implications of the Revised 2025 Business and Management Curriculum

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Abstract

The Higher Education Commission (HEC) of Pakistan has revised the Business and Management degree program levels 5, 6, and 7 curricula in October 2025 in light of the National Education Framework (NQF). The updated standards are aligned with mandated HEC's Undergraduate Education Policy V 1.1 (2023). These eminent changes have been brought about by the Industrial Revolution 4.0, technologies based skills demands. In the revised curriculum, the increase of digital courses is more evident to fulfill the market demands of these emerging and ever-evolving technologies, along with other social skills. In the revised curriculum, with the fusion of technology-based courses in Business Studies majors like HRM, Marketing, and Finance, etc., new degree streams like Business Analytics and Digital Business & E-Commerce are also introduced. These digitally integrated courses have infrastructural demands. It is a question whether, in the current position, the universities in Pakistan have the infrastructural capacity to meet the requirements of these new and sophisticated technologies. A situational overview is utmost important to understand the current infrastructural standing of the universities. This study aims to explore the current university capacity for offering these modern technology-based courses. The best-suited study for the mentioned research questions is a qualitative exploratory, inductive study. The method proposed for this study is Phenomenology. The analysis method suggested is the 6 steps' Reflective Thematic Analysis (RTA) of Braun and Clark (2006). This method permits the researcher to reflect on the coded participants' statements for further explanation. The latent level of explanation is proposed to understand the underlying meaning of the interviewee's statements. The participants for the study are Business Studies Teachers in Pakistani universities. The purposive-convenient sampling technique has been followed for the data gathering. The finding reveals infrastructure gaps at universities for offering digital and smart technology-embedded courses. Particularly specialized software for the students' hands-on practice and dedicated computer labs for business studies. The study's findings are significant for researchers seeking to understand contextual differences and similarities in offering technology-based courses. The study is equally important for policymakers, strategy crafters and executors, educational institutional management & governors, and university leadership.

Keywords: Business Curriculum Revision 2025, Education Transformation, Digital Integration, University Infrastructure.

1. Introduction

The Higher Education Commission of Pakistan has revised Business and Management degrees' curriculum at levels 5, 6 & 7 (Higher Education Commission, 2025). The levels of degrees are Associate-Bachelor of Business Administration, Bachelor of Business Administration, and Master of Business Administration, including Master of Science in Management (HEC, 2016). All the other degrees, like Business Analytics, follow the same pattern mentioned above. These standard updates in the Business Studies Curriculum are made in response to market demands of the Industrial Revolution 4.0. The IR 4.0 revolution is the combined effect of smart technologies, including Artificial Intelligence(AI), Big Data(BD), the Internet of Things (IoT), and Blockchain. This revolution is also referred to as the smart revolution due to the integration of sophisticated automation-based technologies, while reducing human interaction to a minimal level. Due to the capacity of these technologies, the fourth revolution is also called the Cyber-Physical Revolution. To fulfill the demands of IR4.0, various digital courses are included in the Management and Business Degrees at levels 5, 6, and 7.

These curricular transformations have necessitated substantial infrastructural development within Pakistani universities to accommodate the requirements of advanced technology-driven courses. It is therefore a prerequisite to ensure the availability of the necessary infrastructure to support these digitally integrated courses and facilitate the effective skills development of business students. This situation necessitates an investigation into the current state of university infrastructure for business studies in light of the demands of Industry 4.0 technologies. This study seeks to undertake a situational analysis of the infrastructural readiness of Pakistani universities in relation to the revised Management and Business curriculum developed by the HEC's National Curriculum Revision Committee (HEC, 2025).

2. Literature Review

With the advent of Industry 4.0, the demand for professional skills has abruptly changed. To address these changes, the Higher Education Commission of Pakistan (HEC) Business Education National Curriculum Revision Committee (NCRC) has revised the curriculum for Management and Business degree programs. The revised curriculum incorporates a fusion of smart technologies. These technology-based courses have specific infrastructural requirements. Meeting these vital needs will support students in upgrading their skills to meet the demands of the Industry 4.0 market.

2.1 Business Education Curriculum Review

In Pakistan, HEC is mandated to regularize and provide guidance to Higher Education Institutions (HEIs). Under HEC supervision National Qualifications Framework (NQF) has been built to structure the tertiary education levels (HEC, 2016). Business Education NCRC, under the supervision of HEC, has revised the curriculum for Management and Business Studies for levels 5, 6, and 7 (HEC, 2025). These levels are Associate-Bachelor of Business Administration (Associate-BBA), Bachelor of Business Administration (BBA), and Master of Business Administration(MBA), including Master of Science in Management (HEC, 2016) respectively. The reforms to the curriculum are made in light of HEC's Undergraduate Education Policy V 1.1 (HEC, 2023). The updates have various changes in already taught streams of business education, besides introducing new majors in response to the current trends of skills demands. Universities and HEIs will follow the revised curriculum for degree awarding. To meet the demands of these courses for effective professional learning institutional infrastructure has to be upgraded.

2.2   Digital Courses Integration

The QNF qualification level 6, BBA degree is typically of four years with a minimum of 130 credit hours. This has been divided into different course categories (Higher Education Commission, 2025). The first category is of General Courses, where out of 14 courses, one is IT related course with the name "Introduction to Information and Communication Technology (ICT)". The second category, Mandatory Core Courses (33 Credit Hours/11 Courses), includes three courses: Digital Marketing, AI in Business, and Digital Transformation and Innovation. The third category is of Core Courses to be decided by HEIs. This category has a total of 27 courses; out of these, 9 courses (27 Credit Hours) will be decided by HEIs. Among these 27 courses, Business Analytics, Business Intelligence, and Decision Support Systems, Digital Marketing & Social Media Strategy, E-Commerce and Digital Business, FinTech and Blockchain for Business, Leadership in the Digital Age, Management Information System, Remote Work and Digital Collaboration are also options for HEIs to choose. In the specialization cluster, the choices vary according to Major, though approximately 8 or 9 choices are digitally embedded courses for each specialization in business studies.

Besides these two new streams of specializations, totally based on new technology trends, Business Analytics and Digital Business & E-Commerce have also been introduced. These updates to the Business Studies have a mass inclusion of Digital and Smart technology-based courses.

2.3   University Infrastructure Requirement

The inclusion of these technology-based courses has created specific infrastructural needs. Universities' infrastructural readiness for the transition from traditional to smart campuses is a key element (Pasi & Dhamak, 2025). The purpose of a smart campus is to provide an innovative physical and digital ecosystem that supports students' learning, teaching, and management processes in response to the demands and challenges of Education 4.0, thereby forming a key infrastructural requirement for universities (Miranda et al., 2021). Infrastructure includes digital and physical facilities like ICT resources, digital classrooms, a learning management system, computer labs, analytics tools, campus internet system, and electricity requirements to support smart courses teaching and learning (Ben-Samhan, 2023). Furthermore, the infrastructure encompasses access to online digital learning platforms, exposure & access to IoT smart devices, simulation rooms, and digital or smart payments, besides easy access to other educational software and hardware tools required in the specialized business studies (Ilhan-Nas *et al.*, 2024).

3.   Methodology

This qualitative study in the specific context of Pakistan's universities employed the Phenomenology methodology founded in the constructivist paradigm (Creswell & Poth, 2024). This inductive and exploratory study used a semi-structured in-depth interview method for data gathering. Data has been gathered from university business studies teachers having more than 5 years of experience in the teaching profession. The Reflexive Thematic Analysis method (Braun & Clarke, 2006) has been used with researcher reflection on coded statements to understand the underlying meaning at the latent level (Patton, 2014).

4.   Findings and Analysis

The participants' statements were analyzed to identify relevant secondary concepts derived from the coded data, which were subsequently grouped to generate themes. To keep participants anonymous, a unique ID code is assigned to each, such as P1, P2, etc. Secondary concepts generated from the coded statements are arranged in tables with produced themes. Researchers' views are incorporated only to explain points already raised by the participants. A

deliberate effort is made to avoid introducing any additional information based on the researcher's own assumptions to keep the study as unbiased as possible.

4.1   University ERP and Digitalization

Enterprise Resource Planning must include an LMS to support teaching and learning processes. The ERP and digitalization of university system processes are important in the debate of university readiness. This represents that the university has the basic resources in place to use digital tools. It also reflects the management's mindset regarding the value given to modern technologies in streamlining management processes. The availability of infrastructure and the level of awareness can be judged through the degree of ERP and digitalization upgrades.

Table 4.1:   *University ERP and Digitalization*

Secondary Concepts (from Codes)	Sub-Theme	Theme
Digitally Enabled but Not Smart(P8)	**University ERP and Digitalization**	**University Readiness for Smart Technology-based Business Studies**
Digitally Enabled but Not Smart(P2)		
Partially Digital(P7)		
Digital Learning Ecosystem(P13)		
Digitalization Pipeline System(P12)		

Internet is available for communication and lettering. In the university through face recognition system with no human interaction, gates can be opened for those who are recognized by the system. In our university, they have introduced CMS (Central Management System). It includes LMS, which pertains to students' enrollment, teacher workload, time table, attendance, mark sheets submission, etc. systems. (P8)

In the context of digitalization, internet access and digital tools have become basic necessities for various purposes. One participant illustrated this by sharing an example from his university, where a face recognition system is used for entry and attendance. This reflects the implementation of an intelligent smart system, marking a step forward in digital transformation.

This system integrates technologies such as AI, the IoT, BD and is supported by Cloud Computing. The second module of the university's ERP system is the CMS, which supports teaching and learning activities. Additionally, the system includes workload information as a digital tool to assist HR processes, particularly in workload analysis.

Upon review, two HR processes, like attendance and workload management, are supported through a Semi-Smart system. This system automates processes and makes simple decisions, such as opening gates for recognized individuals. However, the system is not yet strategically integrated with other modules to achieve broader institutional goals.

To some extent, we are ready. I will discuss from the students' point of view. For instance, there is MIS or the University Management System. One can submit one's attendance, and can give an assignment, and even take a midterm exam in it. So we have gone a bit ahead from an IT perspective. (P20)

This participant (20) says that the university has introduced the Management System for attendance and to upload assignments for the relevant students. The system also facilitating in arranging and conduct of online exams. The use of digital technologies to support various

processes and tasks is clear evidence of the benefits offered by these modern technologies for easy connectivity and saving time and cost.

Individual level is one thing, but organizational level is different. There is no such awareness. Even no such priority either. I will talk about our universities in the public sector, particularly that they don't have such priorities. Recently, we launched CMS (Campus Management System), but it is not fully functional either. One cannot submit results or check students' assignments in it. (P7)

The CMS has been launched but is not yet fully functional. The reasons cited include a lack of awareness and low prioritization. The benefits and utility of such systems are often underestimated, primarily due to reliance on traditional paper-based processes, which require fewer skills and are easier to operate.

This resistance to change stems from familiarity and convenience. However, once users begin to engage with the system, they start to recognize the ease and efficiency that digital tools offer. The issue of prioritization also arises when efficiency is not a primary goal or when there is a general lack of awareness about the strategic advantages of digital systems.

Even here is an online system exists like MIS. Before it was LMS, but now there is MIS to which everyone has access, and the paper can also be uploaded to it. So this practice does exist here. We are given proper training for it. So this is kind of training and development. (P13)

The Management Information System (MIS) has been launched to replace the previously used LMS, and proper training has been arranged to ensure effective utilization of this new digital system. This statement highlights not only the upgrade from the older system to a more robust and comprehensive MIS but also reflects a serious commitment to its implementation through organized training efforts.

Now there have been a lot of changes. Now people have to use things willy-nilly. Mostly in the public sector, particularly in universities, it is now the HEC policy, and it is being funded by the World Bank under the ERP, which is a centralized system that manages everything, including HR. Even in our university, a system has been designed, though not under ERP, in which our performance evaluation is done. (P12)

HEC has launched an ERP implementation project funded by the World Bank (World Bank, 2019). It would be mandatory to operationalize this centralized management system to be implemented by all the universities. Initially, the project has targeted 25 institutions. Gradually, the implementation will be extended to all Higher Education institutions. The Student Lifecycle Management System (SLCS) is for admission, registration, allocation of courses, assignments, transcripts, and other operations related to learning and development. Secure local Cloud hosting connected with high bandwidth through Pakistan Education & Research Network (PERN) and Astrolabes data centers. Planning and governance are supported by dashboards and reporting tools for analysis and informed decisions.

4.2 Academic Infrastructure for Smart Technology-based Business Studies

Perceived Academic Infrastructure for Instructional Delivery is a sub-theme of University Readiness for Smart Technology-based Business Studies. This theme combined the expressions made by interviewees while explaining their perceived readiness to provide compulsory support for Smart Technology-based Business studies instructional delivery for students' learning. Through this discussion, the current position of Business Schools in universities will be assessed for the fulfillment of basic resources needed to offer Digital tools fusion courses to business professionals.

Table 4.2:   Academic Infrastructure

Secondary Concepts (from Codes)	Sub-Theme	Main Theme
Blended Teaching Without Cubic Classes Due to Budget Lack(P18)	Academic Infrastructure for Smart Technology-based Business Studies	University Readiness for Smart Technology-based Business Studies
Absence of HRIS / HR Software for students Training (P20, P12, P7) Slow Net & System Breakdowns in Outskirts(P12) Digital Equity Across Academic Disciplines(P12) Students Lack Gadgets and Laptops(P20) Vision Deficit and Digital Resource Void(P12) Poor Digital Access in Peripheral Regions(P12) Budgetary Constraints(P3) Resource Constraints in Course Customization(P7) Budget Constraints make Work Load on Teachers(P8)		

So far lab is concerned, we can provide the lab. If you talk about this campus, we have four IT labs in this campus. So Business Studies students can request the Chairman to permit us to use it for a certain time. And as for the software you mentioned, we don't have specialized software for business students to work with. (P20)

Computer labs are available, though not dedicated to business students, and request-based permission would be granted. In the meantime, specialized digital software is missing. Software availability free version, and in the presence of many reviews, demo videos, and a trial version provide the opportunity to understand and have hands-on practice skills. Most of the companies also allow a free version for students with limited functionality, enough for learning basic skills.

"So up to the extent of skill level, we have the readiness, but when we talk of facility, then a lab is needed". (P7)

The level of resources across universities varies significantly, as reflected in participants' perceptions. The perceived availability of resources also differs greatly among departments. With digital integration becoming essential in all aspects of life, the need for technological infrastructure is no longer limited to traditionally tech-focused disciplines. As one participant stated: *"So far as the lab is concerned, now the lab is not the need of computer science only. Now even sociology needs a lab. So we are short of labs and systems" (P12).*

Disciplines that were once not considered professional or technology-intensive now require digital tools to meet their field-specific needs. In such a context, the demand for computer labs is expected to rise, or existing resources must be distributed equitably to support all departments, not just computer science.

I will be happy with such a change. I will be happy to teach a class from my home if the internet and other facilities are available. But it will be a blended learning and a cubicle classroom, which is noise-proof. It should be totally online. But how it will be funded, this is the question. (P18)

The participant complained about the infrastructure gap of cubic classes for blended teaching. The basic reason given is a lack of funds for such developments.

"They leave from here and go to an institution to work as an HR employee, and they have software for work. So, there is no such thing". (P20)

The interviewee emphasized the growing importance of digital technology for students entering the professional environment. It has been noted that preparing students for IR 4.0 requires access to specialized software, which is currently lacking in many business schools.

The universities that are outside of cities have electricity and internet problems. In northern areas like Gilgit Baltistan has only 4 hours of electricity in 24 hours. While it is a leading university in IT. These people install solar systems. Universities also use solar systems to the extent they can afford. City areas have no such problems with electricity and the network. But we lack specialized labs. For example, there should be a dedicated lab for management sciences to introduce technologies to students. (P12)

The availability of resources varies significantly between suburban and urban university settings. One participant highlighted that in remote areas, solar energy systems have been installed to support IT labs and meet other technological needs. For example, a university in Gilgit-Baltistan was described as an IT-leading institution, despite having electricity for only four hours a day.

In contrast, universities in urban areas where electricity is not a major issue still lack dedicated computer labs for disciplines like Management Sciences. This reflects a gap in strategic planning, where resource allocation does not align with the evolving digital needs of all academic departments.

I have seen while visiting the Karakoram International University. They are not bad. There is not much signal. Just one particular kind of SIM works there. Other SIMs do not work. Students often go to the hilltops to catch signals. So this is the one problem with the countryside. (P12)

Another problem faced by students living in the outskirts and suburban areas is the lack of reliable internet infrastructure. Internet cable lines are not extended to these regions, so most students rely on mobile data. Mobile coverage is also weak; in many areas, only a single service provider is available. In some cases, students have to trudge across difficult terrain to find a spot where they can connect to the internet.

Yes, this is possible. But then we should give all the gadgets required for such things. For example, most of our students don't have laptops. Then they sit with a friend to help do such assignments. So, it is necessary to give all students laptops, so they can gain command over the required software. Then we can take them forward. (P20)

Most students do not own laptops or personal computers. They often borrow devices from their peers to complete assignments and meet academic requirements. Having access to a personal laptop would provide students with greater flexibility and opportunities to master digital skills, which are increasingly essential in today's learning and professional environments.

"I have been teaching for 17 years on university level. I have observed that the public sector has funds and capacity, but they do not have readiness. They lack the required infrastructure and curriculum". (P12)

Public sector universities, despite having access to funding and resources, still lack the necessary infrastructure and curriculum integration of smart technologies. This gap highlights a deeper issue—not just resource allocation, but a lack of commitment to quality, a growth mindset, and a strategic vision for the future. Without these guiding principles, even well-

funded institutions may fail to prepare students for the evolving demands of digital and smart HRM environments. Still, there are public universities with obvious funding constraints, like the statement, *"A university can impart skills next to awareness. But universities themselves have difficulties. As you see in KPK, Peshawar University is the parent university. Even though it has so many budgetary constraints,"* made by (P3).

The finance faculty is larger, while the HR faculty is smaller. Besides this, HRM teachers have been given marketing subjects to teach. The reason is again the workload. We need five teachers, but due to a lack of funds, they are not being hired. (P8)

HRM teachers are currently required to teach Marketing subjects due to the absence of an HR major program. Despite these adjustments, five new faculty recruitments are still needed to manage the workload effectively. However, in times of financial constraints, filling these vacant positions remains a significant challenge.

Recently, HEC issued the graduate and post-graduate policy according to which a person who has graduated can do his Ph.D in any subject. For example, if a person has graduated in law, they can do their Ph.D. in management or any other subject. This system exists in the world. But when it came to Pakistan, there were difficulties. For example, when we adopted this policy, there were such situations as a scholar of chemistry came with 18 years of education, and another person with an M.Phil in business. The two cannot go along together in this program. You have to introduce some basic courses for scholars with chemistry. But we did not have the faculty, rooms, and time frame to run such a program. So there are hurdles, and HEC is thinking over it, and universities too. They want to have such combinations. For example, a man has read Islamiat and wants to read technologies. If you restrict him or ban him from doing this. It means you stopped his career. So this is the requirement of the time, but indeed, there are difficulties. (P7)

Universities around the world are increasingly offering students more freedom in course selection to better align with their interests and career goals, especially in response to the rapidly evolving demand for diverse skill sets. In line with this global trend, the Higher Education Commission (HEC) has also allowed students to choose subjects they consider vital for their career paths and skill development, in synergy with their personal interests.

However, when students opt for courses outside their primary discipline, it creates a need for foundational support courses. This poses a challenge for universities, which already face faculty workload issues. While HEC formulates policies to keep pace with global academic and market demands, the practical implementation of these policies becomes difficult due to limited resources within universities.

The infrastructure readiness status across universities does not vary significantly; however, IT labs are still needed in business schools. A centralized and equitable scheduling approach is essential to ensure that available resources are utilized effectively by all departments. Many participants emphasized the need for specialized software to enable hands-on practice, particularly in business-related specialized fields.

While some participants acknowledged the presence of sufficient resources in certain cases, these resources are often underutilized, especially in public sector universities. Connectivity issues were also reported, both in suburban and urban institutions. Even universities located in densely populated towns expressed concerns about frequent internet breakdowns and slow service.

Due to faculty shortages, universities are only able to run academic programs in a limited number of major disciplines. Students' customized study streams, based on personal interests,

are often not feasible. Budgetary constraints remain a major barrier to the introduction of smart technologies and the fulfillment of Education 4.0 requirements.

5.   Discussion and Conclusion

The availability of support infrastructures in the teaching process of technology-enabled courses has been widely debated, as respondents were encouraged to share their thoughts on aspects that dominate the readiness of business schools towards the use of Smart Technologies. The results obtained in the study are all fully explained in the preceding sections. In this conclusion section of the research report, the findings and analysis are further synthesized to conclude. Conclusions are presented in a summarized form for each corresponding area explored in the study.

According to participants, public sector business schools have the capacity and resources but exhibit low adaptability to technologies. On the contrary, private sector universities' business schools are more adaptive (Acuna *et al.*, 2024; Soomro *et al.*, 2020). Private institutions show greater adaptability, with relative abundance (P12), and therefore excel in technology integration and adoption. Universities are recommended for an ERP system based on modern technologies. to serve the purpose of students' experiential learning for hands-on job practice, besides showcasing other stakeholders, while suggesting modern technologies for process efficiency and effectiveness. It is recommended to have an LMS for teaching and learning. Students do learn through practical exposure to technologies. To address this gap, HEC has launched an ERP system implementation in 25 universities of Pakistan, with the support of World Bank funds, yet the system is not fully mature. It is hoped that separate modules for different majors of business studies based on advanced technologies will be part of this ERP.

The adoption of ERP technology and digitization in universities is a positive indicator for leadership advancement towards technological progress (Kelder *et al.*, 2025). ERP technology and other digitized operations in universities encourage learning in various fields for students through hands-on experience with advanced technology (Wei & Cao, 2025). In the institution, a Digital Learning Ecosystem (P13) has been implemented to enable the sharing of subject matter, announcements about topics for assignments, and the like. A third respondent mentioned the Campus Management System, which is a partially digital system (P7), given the fact that most activities are conducted manually. The prevalent systems were digital and partially smart (P8, P2). In a true smart system, the whole process would be automated and would work in accordance with the strategic goals of the institutions (Elshapasy & Mohamed, 2024; Fernández *et al.*, 2023).

Towards the digital transformation, the HEC has initiated a project for the complete SAP ERP, Student Lifecycle Management (SLCM) implementation (HEC, n.d.), funded by the World Bank (P12). However, these initiatives are not yet fully materialized or implemented. Now, this is up to the university management and leadership to determine how effectively they can materialize this endeavor and ensure the successful digital transformation. A smart technology teaching and learning ecosystem requires infrastructure. Though not very extensive, unlike the need in other STEM disciplines. Availability of the internet is a basic requirement for IT-based courses; the findings revealed frequent breakdowns coupled with electricity failure and load-shedding issues. The majority of Business Schools lack a dedicated computer lab for business studies. In the times of this digital revolution, almost all fields of study need computer access. Individuals from a poor background have no personal gadgets or laptops. It is recommended for universities to ensure the availability of electricity with alternative options besides the net and lab facilities.

Additionally, Business Schools should arrange specialized software for students' practical learning and practice. The findings highlighted the budgetary constraints in Pakistani universities. Policymakers and other governing bodies must think seriously about these issues to resolve and ensure arrangements for the required infrastructure.

6.   Summary

The academic setup for Digital and Smart technologies embedded courses can be a crucial determinant in institutional preparedness (Amghar & Benchekroun, 2025). While technical solicitations are often seen as negligible by business schools when compared to the STEM departments (Yakubu *et al.*, 2020). The study highlights the need for a fundamental shift in thinking toward digital equity across all educational streams (P12). Contemporaneous social sciences and business studies must enjoy equal access to high-end digital apparatus and, thus, the findings propose a need for totally dedicated specialized labs for business students rather than being on the floor of general-purpose facilities (Souza & Debs, 2024). However, the major infrastructural "gaps" hinder the transformation into IR. 4.0. Most universities lack cubicle-type structured classes meant for blended teaching due to an acute lack of funds (P18). The most pertinent shortcoming is the almost complete lack of specialized software for training students in business studies (P20, P12, P7). In fact, without exposure to the real digital tools used in industry nowadays, students cannot practice the automated handling of business management processes (Nugroho *et al.*, 2025). In addition, there are no personal gadgets and laptops (P20) available for students to use for practice outside the classroom. The digital divide is even wider (Afzal *et al.*, 2023), particularly for students who are coming from the periphery, where system breakdowns and slow internet connectivity have become routine; within major towns, too, poor digital access remains a constant barrier in peripheral regions (P12).

In Pakistan, particularly at universities, budgetary constraints (P3) impede the adoption of IR 4.0 technologies (APP, 2023). While Education 4.0 is all about customization of courses according to the students' individual needs, lack of funding makes it virtually impossible to go for any dedicated implementation (P7). This financial scarcity also leads to increased teacher workloads (P8) whereby faculty members are assigned non-specialization courses. The effort needed to manage these diverse loads hardly allows any time for innovation or upskilling for these teachers, a finding confirmed by studies from other countries (King'ola, 2024; Song & Boyer, 2020). However, in certain instances where resources abound, a "vision deficit" (P12) has become some ultimate barrier to digital transformation, meaning that funding cannot succeed without strategic leadership alone (Jing *et al.*, 2025).

7.   Limitation and Further Research Gaps

The study has comprehensively explored the infrastructural demands of universities in relation to the revised Management and Business curriculum (2025). However, like all research studies, it has certain limitations due to research objectives, time constraints, and budgetary limitations. These limitations also highlight several research gaps and directions for future studies. Since the present study is based on teachers' perceptions and lived experiences, future research is recommended to conduct physical assessments of university infrastructure to evaluate the actual availability of technological facilities. Further studies are also required to explore specialized digital tools for different majors of business studies that can support students' skill development and practical training. In addition, comparative studies between public and private sector universities may provide valuable insights into the existing digital divide in higher education. Moreover, a systematic review of the literature is needed to understand the infrastructural readiness of foreign universities for smart technology–based education. Such studies could further be evaluated in comparison with Pakistan's universities

to identify gaps and opportunities for improvement.

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