Center for Management Science Research
ISSN: 3006-5291 3006-5283 Volume 3, Issue 8, 2025

RECOMMENDATIONS FOR BUSINESS SCHOOL READINESS FOR SMART HRM 4.0

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DOI: https://doi.org/10.5281/zenodo.18383402

Keywords
Smart HRM4.0, Business School Readiness, Smart HRM Curriculum, Smart HRM Teaching Competencies, Business School infrastructure for Smart HRM

Article History
Received: 03 November 2025
Accepted: 17 December 2025
Published: 31 December 2025

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Abstract

The Industrial Revolution 4.0 is also called the Age of Cyber-Physical or the Smart Industry era. It has profound effects on all fields of life, especially organizational management processes and practices. Human Resource Management's traditional functions are going through a tremendous shift. The Smart Industry era demands new skill sets from HRM professionals to work in harmony with other functional areas of Business and Management in the IR 4.0 landscape. Higher Education Business Schools have a significant role in developing market-ready professionals. This study focuses on the changes to be made in Business Schools' ecology to contribute to students' preparedness for Smart HRM 4.0. This study explored recommendations for universities to drive viable implementation strategies to prepare students for Smart HRM 4.0 in Khyber Pakhtunkhwa, Pakistan. The Findings suggest making changes in the Business Curriculum by integrating smart technology embedded HRM courses. The recommendations also propose skills development for the faculty. The study endorses teacher development in two categories: basic course knowledge and skills with instructional delivery. This research study further advocates for university infrastructural adjustments to create a supportive ecosystem for teaching and learning these modern technology-based courses. The study proposed practices to Different bodies in Business Education Governance and Management, according to their role, to make the university and all other bodies aligned for greater collaboration. HEC, as a major stakeholder in the Curriculum, is proposed to make changes in the Higher Education policies to respond to abrupt changes brought by Industrial Revolution 4.0. This study employed a qualitative approach situated within an interpretivist paradigm to explore recommendations for university readiness for Smart HRM teaching and learning in a specific context of Khyber Pakhtunkhwa. Utilizing a phenomenological methodology to understand the lived experiences of Business Schools' HRM teachers to recommend Readiness strategies to the university. Data were collected through semi-structured in-depth interviews. Data analysis followed the principles of Reflexive Thematic Analysis, focusing on a latent level of coding to uncover underlying ideas and assumptions. This study contributes to the existing literature by sharing in-depth contextual recommendations for Business Schools' readiness in students' preparedness for Smart HRM 4.0. These proposed recommendations for Business Schools', Curriculum, Teaching Competence, and Infrastructure will

serve as a guide for policymakers and implementation bodies in Higher Education Governance and Management.

Introduction

Industrial Revolution 4.0 has disrupted the traditional Human Resources Management Functions and Practices to a great extent (Jabeen et al., 2025; Pató et al., 2022; Stuss, 2023). Both the existing and the expected change of HR engaged by rising innovations in IR 4.0 appear prone to a noteworthy effect on HR, to such an extent that the articulation Smart Human Resources 4.0 (SHR 4.0) was coined (Imperatori et al., 2020). Smart HRM 4.0 practices are HR practices that utilize multiple advanced technologies to manage human resources effectively and efficiently (Sivathanu & Pillai, 2018). Smart HRM 4.0 practices include the integration of Industry 4.0 technology to automate the process and procedure of various functions of HR (Pillai & Srivastava, 2022).

In the current scenario, traditional HRM is proposed to be replaced by Smart HRM to align with the Industrial Revolution 4.0 (IR4.0) environment (Dwi et al., 2025; Zhang & Chen, 2024). The market demands new skills and competencies, and Business Schools are under high pressure to respond to these challenges. The development of required skills needs structural changes in Business School Curricula and Infrastructure.

Until now, the Business Schools have offered traditional courses in HRM. The reason for this is IR 4.0, a quite recent phenomenon. Which is not yet mature and is going through different changes. The researcher and scholars are not sure about its final shape and the functionalities offered by this combination of multi-Technologies. Universities need guidance and direction for a smooth transition to the Smart Technologies-based courses.

The available literature on university readiness primarily addresses issues related to Engineering and Technology. There is a lack of research to specifically recommend business schools' readiness strategies and practices to prepare students for Smart HRM 4.0.

1.1 Problem Statement

The above discussion on the rarity of research on recommendations to Business School, necessitate to conduct a comprehensive exploratory study to address the indigenous problems associated with local Universities' Business Schools in imparting Smart HRM knowledge and skills. The study explores the recommendations for Business Schools' readiness for students' preparedness to work in harmony with other departments at work environment in the era of Smart Revolution.

1.2 Purpose of the Study

The purpose of the study is to explore and interpret the recommendations for Business Schools' readiness in the landscape of IR 4.0. The study recommendations finding will provide participants' perceptions and insights for viable strategies to guide the Design and Implementation of Smart HRM courses and ecology for smooth transition and transformation.

1.3 Research Questions

Based on the Literature Review, Research Gap, and Problem Statement, the following questions are generated to fulfil the Purpose of the Study.

- What are the Recommendations for Business Schools Curriculum in students' preparedness for Smart HRM in Khyber Pakhtunkhwa, Pakistan?
- Suggest Recommendations for Teachers' Competencies in Smart HRM 4.0 curriculum and its instruction delivery?
- What are the recommendations for the Infrastructural needs of Universities' Business Schools to offer Smart HRM courses?

1.4 Significance of the Study

The study is equally important for researchers, policy makers, business educators, and leadership & management in higher education institutions and other governing bodies in Business

Education. International researchers are highly interested in such qualitative studies to find contextual differences in the implementation of management practices and strategies. Meanwhile, the indigenous researchers working on similar or relevant studies are enlightened for further elaboration, and Quantitative studies find themes that emerge from such contextual qualitative studies. Policy makers and Higher Business Education Governance and Management bodies will be enlightened for policy making, development, and implementation of market-based quality education initiatives.

Review of Literature

The Review of literature revealed that with the emergence of the 4th Industrial Revolution, new terms and concepts in the field of HRM have been introduced. In this regard, it is important to define the term Smart HRM 4.0. The scholars have defined the term as: Smart HRM 4.0 practices are HR practices that utilize multiple advanced technologies to manage human resources effectively and efficiently (Sivathanu & Pillai, 2018). These advanced technologies have exponentially transforming the Traditional HRM processes and practices.

2.1 Change in Traditional HRM

Technological changes have transformed how Human capital is managed (Malavika & Mohana, 2021). With the emergence of new technologies in a highly competitive marketplace, the human resource department also needs to adapt its processes to meet the demands of these updated technologies (Bondarouk & Brewster, 2016).

Rapid changes in organizational, social, and technological advancements in informational and communicational technologies have evolved the role of Human Resource Management, which creates a load on HR professionals to innovate and provide better quality services (Malavika & Mohana, 2021; Seočanac, 2025).

To take full benefit of digitalization, it is useful to integrate the concepts of Industry 4.0 into the functions of the business and organizational departments (Bondarouk & Brewster, 2016). Industries can have high performance through digitization in the era of IR 4.0, but there are some obstacles, and HR conventional practices are one of those (Nagy et al., 2018). International organizations are making moves to enhance performance by incorporating more robust information and communication technologies to renovate management practices and to improve the proficiency of their performance (Sakib et al., 2025).

The variables that contribute to organizational performance are the provision of adequate resources, including financial, technical expertise, and technical infrastructure.

Many researchers have a consensus on Smart HRM 4.0's potential to convert the HRM department to a strategic role by utilizing technology for "operational, relational and transformational" ends (Parry & Tyson, 2011; Al-Faouri et al., 2024).

All the above-mentioned changes have revolutionized the world and specifically the business environment; it has created an intense need to align human resource management with these abrupt changes.

2.2 Skills and Competencies for Smart HRM 4.0

In the present generation, skilled employees with new technologies can convert HR processes to Smart HR 4.0 for reaping various benefits offered by it (Shaw & Varghese, 2018; Sivathanu & Pillai, 2018).

Frequent interaction of humans with digital devices and their collection of data has made such a heap that it has become big data(Pereira & Costa, 2019). Traditional HR practices were felt to be unexciting. With the advent of big data, old concepts and activities are replaced which has given new energy to HR practices(McLean et al., 2016) as cited by (S. Ali et al., 2020). Instead of conventional techniques, People analytics techniques can be employed for staff retention (Mishra et al., 2016), skills development, and engagement (Baakeel, 2020).

Artificial Intelligence (AI) can assist leaders and managers to reach effective HRM functional decisions regarding hiring, staff development, and performance appraisal (Mehrabad & Fathian, 2007). The Digital revolution has enabled the HR

department to use numerous approaches like big data-driven analysis, cloud computing, and artificial intelligence to make the resources simple (Amla & Malhotra, 2017; Huang & Hayat, 2019). The relationship between robots and humans has been sped up by Industry 4.0, and the magnitude of time spent on the job and work location is also altering (Imperatori et al., 2020). The offering of computers and robotic machines has increased manifold, though these have shown their presence for years. The way the data has been collected, analyzed, and utilized for accurate decisions, since then, this change has become a competitive factor. Simple and routine processes are being automated, and the remaining processes will be more complex and interwoven; therefore, it would be essential to incorporate new learning strategies for the current and coming workforce(Shaw & Varghese, 2018). It is required to strategically manage the competencies to respond to emerging challenges of Industry 4.0 (Shaw & Varghese, 2018).

Technology will just eliminate the routine repetitive tasks, but will not completely take away the HR functions. To remain in organizations, HR professionals will need to hone their skills. The advancement in technology should be taken as an opportunity rather than considered as a threat to the HR profession(Sharma & Sakpal, 2019).

The key change in backing HR processes is the application of an up-to-date Information System (Shiferaw & Birbirsa, 2025). These challenges can bring about both personal and organizational change. Employees need to foster new abilities and capacities, from technical skills to social and emotional abilities, just as inventive abilities(Colbert et al., 2016; Imperatori et al., 2020).

The improvement of organizations' performance can be achieved through providing the latest competencies by training the workforce (Gan, Ling & Yusof, Mohd, 2019).

While automated technology depends upon information systems and communication technology, HR professionals are unlikely deficient in (Vrontis et al., 2021) required technological and other skills for these huge-scale HRM restructuring and redesigning (Li, 2024). To develop Smart HRM4.0 competencies, Business Schools have to play their role to prepare students for the IR4.0 landscape.

Methodology

To develop students for Smart HRM is a new phenomenon for the Universities' Business Schools in Khyber Pakhtunkhwa, Pakistan. Qualitative research following the phenomenological paradigm is befitting to explore and interpret a changing landscape in the educational ecosystem (Bulte, 2018). Phenomenology, as a qualitative research explore and interprets the lived experiences of individuals for a constructed conception about conceptual or physical phenomena(Creswell 2007).

To suggest recommendations for the local context of Business Schools in Khyber Pakhtunkhwa is valued by the researcher and practitioners (Ali & Brandl, 2017). This contextual approach is further strengthened through the application of an inductive approach(Kozica et al., 2014). This is a bottom-up approach with no preplanned questionnaire, the study is guided by the discussion with participants. Open-ended prompt questions are used to understand the local challenges and organizational setting (Powell & DiMaggio, 2012) to suggest viable strategies according to the situation (Thévenot, 2001; Eymard-Duvernay et al., 2005).

3.1 Population & Sampling

This study has employed Purposive sampling to gather data from knowledgeable and experienced (Bernard, 2006) HRM teachers in the Private and Public sector universities' Business schools in Khyber Pakhtunkhwa, Pakistan. The department in the university offering business studies is considered a "Business School" in this study. A total of 20 interviews were conducted with this homogeneous group of educators.

3.2 Method

This research study is qualitative, and "Qualitative researchers are interested in understanding the meaning that people have constructed, that is, how people make sense of their world and the experiences they have in the world" (Merriam,

2009, p.13). To understand the participants' constructed perception, in-depth interviews with participants have been conducted by asking prompt questions in Pashto. Later on, the audio-recorded interviews were translated into English, and excerpts were made for further analysis and conclusions.

In the current study (Braun & Clarke, 2006), a Reflexive Thematic Analysis six-phase model has been used. For familiarizing with data, audio listening and excerpting have already served this requirement. The respondents' statements were thoroughly studied many times to generate code in the second phase of the study. In the 3rd phase, according to Braun and Clark (2006) RTA model, relevant codes were grouped together in themes. The theme names were proposed to represent the collective meaning of all codes. In phase 5, all themes were reviewed carefully; during this process, many new themes emerged, and many others merged into one another to create completely new themes. In the sixth phase, a report was written, besides merging and creating new themes by slicing a larger theme into two or more themes (Braun & Clarke, 2021). This has changed the scope and meaning of themes several times.

The study is based on an interpretivist approach for latent analysis(Terry et al., 2017). The interpretivist approach and reflective thematic analysis allow the researcher to include personal understanding and present explanations of participants' views and perceptions. This approach helps in bringing clarity to participants underlying meaning and contextual understanding. It is asserted by (Given, 2012; Guest et al., 2014) that Thematic Analysis is compatible with Phenomenology.

Finding and Analysis

This section of the study aims to gather and highlight the recommendations from the participants' interviews and interpreted by the researcher's reflective analysis. The interview audio data, later on transcribed, have been thoroughly studied for participants' statements and codes generation. The similar codes are discussed generate themes. The participants' statements are given with citation of P followed by a number, which represents the respondent's unique ID to hide their real name and identity.

4.1 Business School Driving Smart HRM 4.0

In this current theme, participants' recommendations to Universities' Business Schools leading the Smart HRM4.0 drive for excellence have been gathered. Every statement is followed by the respective reflection, as demanded by the Reflective Thematic Analysis method.

Business School prepares students who go out to serve in different industries and organizations. So they should give them the awareness and skills required in the industry. They should teach them such courses and give them training on modern technologies. (P9)

The increased use of modern technologies in enterprises demands technologically equipped employees. These employees must not only utilize the available tools but also apply their skills and knowledge to innovate and ensure the better use of modern techniques to achieve overall organizational goals.

Table 4.1 Business School Driving Smart HRM 4.0

Secondary Concepts (from Codes)	Sub-Theme	Theme
Business Education's Industry Mandate(P9)	**Strategic Quality Vision**	
Market-Informed, Value-Based Curriculum Review(P7)		
Gen Z & Alpha Demand Tech-Enabled Skills(P10)		
Smart HRM Courses & Faculty Training(P16)		
Professional Excellence in Key Roles(P8)		
Quality Enhancement Through NBEAC(P8)		
University Research as a Smart-Tech Catalyst (P2)		
Intensified Digital Courses Infusion(P8)		

Digital Responsibility and Law in Curriculum(P18)	**Integrating Smart HRM4.0 into Curriculum**	**Business School Driving Smart HRM 4.0**
Discretionary Smart Tech Integration(P3)		
Empowering Student Course Personalization(P20)	**Customization of Courses Education 4.0**	
Modularizing Degrees with Micro-Credentials(P3)		
Pioneering University Tech Models(P3)		
HEC-Enforced Smart Technology Curriculum(P3)	**Curriculum Enforcement**	
HEC Flexibility for Curriculum Innovation(P14)		
HEC Driving Smart Tech Prioritization(P7)		
HEC's Provincial Committee for Research and Innovation(P7)		
HEC Innovation & Implementation Centers in Universities(P7)		

4.1.1 Strategic Quality Vision

This sub-theme encompassed the participants' recommendations regarding the strategic direction for quality enhancement that universities should take. The suggestions, covering both curriculum and various administrative issues, require refinement to ensure a smooth transformation of current practices that can efficiently respond to technological advancements.

So far as universities are concerned, they mostly teach theoretical things. It is required that we teach the children such courses and give them such skills that they require for life. Not just requirements and skills should be kept in mind, its compatibility with cultural values should be considered. (P7).

The participant raised concerns regarding the curriculum delivery, noting that sharing only theoretical knowledge is insufficient for students' professional careers. The respondent agreed that practical skills are primarily gained in the working environment, but at the same time, stressed the need for skills development within the university setting, as practical exposure often only begins after securing the first job. The participant suggested developing an up-to-date curriculum focused on upskilling students in trending technological tools and techniques. Furthermore, strong emphasis was put on highly considering cultural values during curriculum development.

Curriculum is needed to be revamped with more inclusion of ICT. Generation Z is now feeling the depletion of market-based skills. I think we have to bring big changes in curriculum. The bookish knowledge should be replaced with skill based curriculum. (P10)

Current generations are more tech-savvy and feel a greater need for the inclusion of integrated technology skills. The curriculum must be revamped and updated with market-driven skills commensurate with Generation Z and Alpha's technological proficiency.

"As for universities, they have to update their curriculum, they have to introduce AI, Analytics, and they have to introduce information system training." (P16)

Universities shall update their curriculum with AI, Data Analytics tools, and techniques. In addition, arrange training on the information system for educators.

The participant emphasize to appoint *"key persons in key positions" (P8)* to efficiently support and work for the introduction and implementation of modern technology-based courses. With the support of a key position, it is not possible to introduce even a minor change. The participant also emphasized that *"accreditation, affiliation (NBEAC) specialize in business administration for quality enhancement and assurance. In organization which accredit business schools around the globe, they must be referred to" (P8)* as these bodies ensure the quality of business schools market ready curriculum and assess the employability of students to make sure they are equipped with the skills demanded.

"Universities can give govt research based suggestions for this purpose." (P2)

Participant P2 recommends that universities, through their involvement in research, can provide multi-dimensional input to the government regarding the introduction and

acceleration of technological advancement. Furthermore, universities can focus their applied research on developing cost-effective and efficient methods to directly assist government initiatives. The same point is highlighted by another respondent, *"For the policy makers you need research. Because for right decisions you need data and study" (P7).* In this way, both academia and students will be involved in applied research. This approach creates a win-win situation for both parties: the university and the government.

4.1.2 Integrating Smart HRM4.0 into Curriculum

"I will say in four years' bachelor programme, five to six subjects related to modern technologies are needed. Course contents, including technologies" (P8)

More IT-based courses' inclusion is recommended by P8. The course's introduction is deemed harder to implement than the course contents, with topics to be added for modern technologies' inclusion. While it is vital to *"apprise students of what is legal and illegal using IT tools" (P18),* for students' safety and security. This is important for their current use of IT, as well as in the future, to avoid any risk.

Recently, the undergraduate policy 2023 was implemented. There are 130-credit-hour programs. 120 is the minimum and can be up to 130 or 135 hours. In those 70 courses are business courses and twelve credit hours, interdisciplinary courses. In those twelve credit hours, we can include Big Data and Business Analytics. So the curriculum has given us the possibility. So again, it is up to the institutions. (P3)

The respondent, through a detailed analysis of the Undergraduate Policy 2023, explained the different segments of the prescribed framework. The 12 credit hours allocated to university discretion within the framework are quite ample for the introduction of modern technologies alongside other Social Sciences courses. The interdisciplinary courses are also left to the discretion of individual universities, which leads to variation across institutions.

"There should be courses and students should have the liberty to select any of their choice. We should not expect the govt to do everything for us. We also have to do something." (P20)

Respondent P20 placed the responsibility on universities to introduce various courses within the allotted discretionary interdisciplinary credit hours. Students should be given choices when selecting these courses. The respondent used the term "government" to point toward the HEC as the official body for Higher Education. The core argument was that the sole responsibility for curriculum changes should not rest with the HEC, but that universities must also play an active role.

The university is an autonomous body. For example, I designed a curriculum for BBA. There are some elective subjects. Now there are some market trends like financial technologies, digital affiliate marketing, and social media. So present these things to the board of studies. HEC does not object to it because it has given us the flexibility. So such things can be approved by the board, and changes can be made accordingly. So this is the role that can be played by the universities. (P14)

Universities, within their own sphere, can add courses in the allotted slots provided by the 2023 Curriculum Framework. Digital technologies are required in every major of business studies. The Board of Studies will definitely approve this, and the HEC will not object to these changes.

The respondent P3, extending the previous point about the university's discretionary choices, suggested the modularization of the degree structure. P3 stated: "*On one side, we have traditional 4-year or 2-year programs. Alongside these programs, there should be another program based on the Micro-credential concept. This is missing in our universities.*"

The participant elaborated on the proposed Micro-credential concept with this detailed explanation:

For instance, I am a BBA student in my second semester, and I am offered a course, say, Digital Marketing. I completed Digital Marketing in the second semester and was awarded a certificate for completion. I could then immediately work online as a freelancer or even take up a part-time job in the industry based on that credential. (P3).

The participant is advocating for Micro-credentials primarily because students need to be market-ready. The immediate acquisition of skills and their corresponding credentials allows students to

enter the job market instantly upon course completion. This paradigm shift would focus more heavily on market-driven skills, enabling students to understand and work in the market while their study is still in progress. Consequently, the emphasis would be on skills demanded by the industry, and theoretical knowledge would be reduced to the minimum required level.

There is a committee for the review of new courses in a semester. That committee hold meeting every year and asks for suggestions to make changes in the courses. They send emails to everyone for suggestions. So HR teachers should send suggestions for such things in the courses. (P13)

This point highlights the important role of teachers in providing feedback at the start of each semester. A committee is seeking suggestions for curriculum changes (P13). Teachers can also recommend the inclusion of technology integration in courses.

Teachers have the analytical power because they are all the day engaged in books. So there should be focused group discussions on university level. They should also invite the curriculum-related industry and ask them what is lacking. Ask them what should be added to the curriculum. What skills are important? Thus, skills gaps are to be identified. But people do not know market trends. (P14)

The Participant (P14) emphasized the recommendations with a logical and valid point to include teachers alongside industry practitioners. Teachers are highly knowledgeable in their subject matter, though their expertise is primarily theoretical and book-based. In contrast, industry experts can provide practical insights into the market and the skills required to efficiently perform the necessary tasks. Thus, both will play their part in developing a skill-rich curriculum.

This regulation is not too old. There have been hardly two years since 2023. But the tech integration is still missing. There is only one thing that is mandatory, and that is the application of ICT. Rest Data Analytics is not included. Data analytics is used in HR, Marketing, Finance, Statistics, and social science, everywhere. So we should have included it in mandatory courses. No doubt I have the option in interdisciplinary, so I can include it there. But another university will not. Because they might not have the faculty or infrastructure. A lot of constraints are there. Until it becomes mandatory, it would be difficult. A few changes would be needed so that Digital Transformation and latest technologies courses should be made mandatory for all graduates. (P3)

The participant acknowledged that the curriculum allows universities some discretion in selecting courses; however, they also admitted that although the curriculum is relatively new, meaningful integration of the courses has not yet taken place (P3). This view diverges from another participant's perspective, who emphasized the same point regarding course discretion (P14).

In the public sector, this is a lengthy process. But the HEC can play this role. A consensus should be developed on HEC levels. Then, passing such a law from university boards is easy. If universities do such things on their own, then it will not have that top priority. (P7)

Participant P7 raised concerns about the complex and lengthy processes in public sector universities for adopting new courses. The respondent recommended that the HEC should build consensus and make the adoption process mandatory. According to the participant, once mandated, universities would value these changes, and the Board of Studies would more easily approve the courses. The participant also suggested:

The HEC should form committees of experts on country level and provincial level at least, because here universities have their own resources and problems, if not in universities like the learning factories and centers in different international universities, as you have mentioned, to work out what should be done in this regard to make changes time to time in the curriculum and make preparation for the future. (P7)

The establishment of provincial-level centers for technology introduction and adaptation was also suggested to address local needs and the specific challenges faced by individual universities.

The main point raised by almost all participants was that universities already have designated slots within the curriculum to introduce technology-rich courses. However, the participants acknowledged that universities have still not introduced technology-based HRM courses, despite having this discretionary space in the

curriculum framework. In this context, the participants collectively recommended that the HEC should take concrete steps, such as mandating specific courses and establishing centers for research in modern technology and curriculum integration.

4.2 Teacher Readiness for Smart HRM 4.0

Table 4.2 Teacher Readiness for Smart HRM 4.0

Secondary Concepts (from Codes)	Theme	Sub-Theme
Hybrid HR Tech Pedagogical Expertise(P8)	**Business Schools Driving Smart HRM 4.0**	**Teacher Readiness for Smart HRM 4.0**
Co-Taught Expertise IT-HRM(P16)		
HR Technology Integration(P18)		
Professional Development Precedes Technology Integration(P14)		
Smart HRM Pedagogical Training(P8)		
Seminar-Based Smart HRM Faculty Training(P8)		
Global Exposure for Smart HRM Pedagogy(P8)		
Faculty Personal Competency Building(P18)		
Arrange Visit to Industry(P9)		
Smart HRM Courses & Faculty Training(P16)		
The Synergy of Awareness and Training in Tech Rollout(P14)		

This sub-theme of "Business Schools Driving Smart HRM 4.0" brings together participants' views on teacher readiness for Smart HRM 4.0. It also reflects their discussion on the strategies that should be adopted if teachers are not adequately prepared. The respondents further shared their perspectives in the form of recommendations.

One participant proposed that "*qualified persons in the business field and HRM should teach subjects like AI so that they can blend technological concepts with HRM functions. IT teachers are often unaware of the subject matter*" (P8). The participant emphasized that only those teachers who are proficient in both business and IT should be assigned technology-embedded courses. Another participant (P18) shared a similar view, stating that "*HR experts should integrate IT skills with HRM,*" highlighting the need for HRM teachers to equally focus on IT concepts within HRM courses.

Another participant in a long example suggests:

Another solution for this is that integrated learning systems can be created. In the universities, the computer science departments or the AI departments and the business department should run integrated courses, like business analytics. The portion of analytics or the technical skill portion should be taught by teachers related to computer science, AI, or the fields of analytics. And a business module by a management teacher. (P16)

Teaching subject matter in a combined manner will require adjustments in the syllabus and timetable. Planning agile time slots will demand additional effort from both the administration and faculty. A second challenge with this approach is that the subject areas are not isolated topics or separate components of the same course; rather, they are embedded and highly interlinked. Every HR concept would need to be taught alongside corresponding IT skills and technological concepts. Simply dividing the content among multiple lecturers would not fully address this integration challenge.

First in teacher training, the curriculum should define how to use AI in their job. This also means how to deliver knowledge to students effectively. I also do not mean that the same AI course should be taught to students at the same level. (P14)

The participant emphasized that the priority should be learning and training in AI, noting that this would help address the challenge of teacher guidance. The complexity and application of AI

within courses may vary across different student levels, but teachers can be trained to use AI technologies relevant to their subject areas.

The interested teachers have to enhance their skills as suggested: "*Those who are interested must enhance their skill level" (P18).* The same suggestion is brought forward by (P8) "*relevant training and development*".

Participant P9 extended the recommendation by suggesting the inclusion of industry visits, stating, *"Besides training, they can arrange visits to the industry."* Such visits can serve as a source of horizon broadening by increasing awareness and providing exposure to real-world practices. However, while industry visits may enhance understanding, a one-day visit is unlikely to substantially contribute to skill development.

Another possibility is the "*arrangement of seminars and conferences*" (P8) to hear from experts in the field. Such events are highly valuable for understanding the diverse nature of the ongoing technological revolution and the evolving skills required in the modern world. This recommendation is also emphasized by P14, who stated, "*I mean, transformation requires a change in the whole culture. It needs a supportive culture. It needs awareness seminars to apprise faculty how to use it.*" P14 extends the notion of awareness beyond individual faculty members to the entire institutional culture, suggesting that a complete paradigm shift is necessary for a thorough overhaul to meet the demands of the current revolution.

The interviewee also suggested "*international tours to know the outer world, how they work*" (P8). These tours could be arranged to foreign universities and industries, enabling participants to observe their practices and learn how they adopt different approaches, especially in universities where courses integrate concepts from two distinct domains.

I see that very big universities do not focus on teacher training. There is no investment in teachers' development. You know very well the economic situation. Everyone is struggling. So somehow we have to push our teachers to learn new tools for executing the new curriculum. As I mentioned it earlier, we are trying to integrate new things like AI into our courses. Many of our teachers are already using them. (P16)

Universities must support these initiatives. While teachers make efforts within their own capacity, the participant (P16) also highlighted the economic constraints that limit how much additional burden can be placed on teachers for training and development in new technologies. Therefore, universities should utilize their own funds and resources to arrange the necessary training programs.

The conclusions drawn from the participants' perspectives recommend that universities assign technology-embedded classes to teachers who have expertise in both HR and IT. It is also suggested that courses be taught collaboratively by experts from their respective fields. In cases where the required skill levels are lacking, participants recommended providing training, seminars, and international exposure through study tours.

4.3 Teaching and Instructional Strategies for Smart HRM 4.0

Teaching and instructional strategies for Smart HRM 4.0 need to be revised to include more practical and experiential learning. Since digital skills and techniques cannot be quickly integrated into the syllabus, they should be enhanced through supplementary approaches beyond the syllabus. The sub-theme highlights these recommendations, as extended by the respondents.

Table 4.3 Teaching and Instructional Strategies for Smart HRM 4.0

Secondary Concepts (from Codes)	Sub-Theme	Theme
Autonomous Curriculum Delivery(P3)	**Teaching and Instructional Strategies for Smart HRM 4.0**	**Business Schools Driving Smart HRM 4.0**
Experiential Learning Approach(P18)		
Industry visits(P18)		
Integrating Digital Competency through assignments(P20)		
Beyond Syllabus Technology Proficiency(P7)		
Learning Beyond Books: Real Job Insights Through Industry Expertise(P1)		
Flexible and Accessible MOOCs (HEC,2023)		

"HEC review curriculum after every two to three years. So, in written papers, do such things exist? Then we come to teaching in the classroom. How much it is delivered depends on institution to institution". (P3)

The participant is highlighting the role of the Higher Education Commission (HEC) in curriculum design, emphasizing the distinction between the Expected Curriculum and the Delivered Curriculum. The practices of various institutions in this regard differ. The participant further underscores the greater role of universities in curriculum delivery, particularly in developing the skills required by students.

The instructional strategies that have a greater impact on skill learning are student-centric approaches. One participant highlighted the importance of these methods: "*Yes, of course. I already use scenario-based and inquiry-based learning methods for teaching students*" (P18). In addition to these, other andragogic approaches should also be adopted, such as "*Teaching methods should be changed; case studies, industry visits, and AI use should be maximized*" (P18). Although these approaches are not strictly limited to classroom teaching, they significantly enhance skill development and understanding of real work environments. The participant further suggested increasing the use of AI to support self-learning.

As in Malaysia, we should also prepare our students for IR 4.0. The best thing for this is that the assignments that we assign students should be done through software, not handwritten. They should also check their plagiarism themselves. They should also remove plagiarism themselves. (P20)

The recommendation by P20 suggests that teachers and universities should increase the use of software tools in assignments and mini-projects, especially when certain content is not part of the formal syllabus. By doing so, courses can be completed within the semester timeframe while still enabling students to develop essential skills that cannot be fully taught during regular class hours due to the time constraints of covering the required syllabus content. Another respondent also has the same recommendation:

Today, the IT, AI, and digital world is the biggest challenge. So, any course that does not have the integration of technologies will not be effective. It is a must that any assignment or research assigned to students should include the use of technologies. They should use IT and software. (P7)

Students should be given assignments based on software usage or objectives that require the integration of IT with HRM concepts. This approach will enable students to learn through hands-on practice with modern tools and help them understand the integration of digital technologies in HRM functions and solutions.

"Another important thing is that when we invite experts from industry to the business schools, they show the real implications". (P1)

Experts from the industry, who are well-versed in technology and its use in daily organizational activities, can provide significant value. Their expertise is particularly important in contexts where ERP systems are implemented, and most HRM functions are digitized through smart technologies. The insights of these experts, drawn

from personal experience, will accurately convey the practical requirements of the field.

"Inclusion of Massive Open Online Courses (MOOCs): MOOCs are available for any student who wishes to enroll in them." (HEC, 2023).

If certain courses cannot be taught due to limited skills or institutional resources, students may be advised to take online MOOC courses. The HEC's 2023 policy for higher studies in business education provides flexibility to institutions in selecting such courses and approving them through their Boards of Studies. The selection and accreditation of these online courses should be carried out by the universities themselves, and the acceptance or equivalence of credit hours remains at their discretion.

This policy represents significant progress by HEC, as it enables local universities to offer access to high-quality international courses from prestigious institutions. It allows students to study subjects that may not be available in their own universities. Additionally, the use of digital learning platforms helps students enhance their IT competencies.

Universities are autonomous in subject delivery. Institutions must equip teachers with modern andragogic techniques that are student-centered and provide opportunities for experiential learning. Universities can also enhance the development of professional skills through additional means, such as IT-based assignments. Virtual online courses may also be recommended to students, with credit hours accredited by the university.

4.4 Infrastructure upgradation for Smart HRM4.0

In this sub-theme, proposals for developing infrastructure to support Smart HRM skills development in educational institutions are presented. Suggestions focus on resources and sustainability to efficiently meet the demands of modern courses and enhance students' skill development.

Table 4.4 Infrastructure upgradation for Smart HRM4.0

Secondary Concepts (from Codes)	Sub-theme	Theme
Infrastructure and Linkage for Digital Leverage(P18)	**Infrastructure upgradation for Smart HRM4.0**	**Business Schools Driving Smart HRM 4.0**
Dedicated Smart Lab for Business Learners(P12)		
University IT Cell Driving Course Innovation(P9)		
University ERP as a Central MIS(P13)		
HRIS Showcasing in Universities(P3)		
Funding Smart Technologies in Higher Education(P8)		
Entrepreneurial, Market-Based Academic Sustainability(P17)		

Universities have to play their role in Smart HRM 4. They have to provide the basic infrastructure for it. Availability of the internet. Availability of an uninterrupted power supply. In case of power outages, they have to install a solar power plant. (P18)

It is the responsibility of institutions to ensure the availability of necessities for digital skills development. Internet access and a reliable power supply are fundamental elements in this regard. Participant P12 further elaborated, stating: "*Urban areas do not face problems of electricity and network connectivity. However, we lack specialized labs. For example, there should be a dedicated lab for management sciences to introduce technologies to students.*" Currently, computer labs are primarily allocated to Computer Science students, while other disciplines, such as business studies, are rarely provided with such facilities. The participant therefore proposed establishing a dedicated lab for business students. Participant P18 also emphasized that it is the responsibility of universities to create "*industrial linkages and ensure infrastructure availability.*"

I would like to say that there should be a separate dept. for it in every institution. For example, in our university, there is a separate IT Cell that decides what new software has come and how it can be implemented. (P9)

A separate cell to monitor advancements in technology is recommended. This department will serve as a research and study center to examine emerging digital tools and suggest their implementation to the relevant course departments.

When we talk of HR in the public sector, we have to look at modern lines of HR. Are there human resources information system HRIS on modern lines? Our public universities have an HR establishment. Are their data updated and automated? Definitely not. First, you have to make your own house in order. HR is a model for others. We just see one aspect of HR.(P3)

The respondent suggested benchmarking public universities' HRIS against modern smart technologies. If we recommend these solutions to industry, then our own institutions must first be improved. Our own house should be in order before advising others on technological implementation for improvement and growth.

Introducing technologies in universities for ERP and Teaching requires adequate funding, as suggested by P8 "*funds availability for activities*". However, the current economic situation in universities is not conducive to providing funds for developmental activities. Participant 17 has outlined detailed solutions for ensuring the availability of funds and resources.

Universities should be entrepreneurial universities by offering degrees in specific specialized field. They should have strategic goals, vision, and mission. For achieving those goals, they are liable to generate revenues. They should have positive thinking and should have smart goals. (P17)

Universities need to build on their unique specialties. They must identify and focus on a specific area in which they aim to excel. Strategic planning with a clear vision, along with growth and development goals, is essential for advancing that area. With a proper strategic approach, universities can also generate the necessary funds.

Universities are responsible for upgrading their infrastructure to support Smart HRM 4.0. Institutions must develop ERP systems based on smart technologies as a benchmark before advising the industry. Universities should adopt entrepreneurial approaches to generate sufficient funds to support modern skill development.

4.5 Strengthening ORIC Functions

ORIC has a primary role in creating awareness about the implementation of modern, research-based outcomes in industry. At the same time, it provides opportunities for students and academics to gain insights into workplace practices. An active and dynamic ORIC can create a win-win situation for both industry and academia. Strengthening ORIC will establish a strong corridor for knowledge transfer and collaboration.

Table 4.5 Strengthening ORIC Functions

Secondary Concepts (from Codes)	Sub-theme	Theme
ORIC Driving Triple Helix Collaboration(P1)	**Strengthening ORIC Functions**	**Business Schools Driving Smart HRM 4.0**
HEC Oversight of Industry-Academia Synergy(P5)		
Strategic Staffing for Research & Outreach(P12)		

"Inside the country, the link between the government and other industrial institutions is created by an ORIC officer. It is the department of industrialization and commercialization which should create such linkages for us on a practical basis". (P1)

ORIC should be rejuvenated with greater energy and more sophisticated approaches to strengthen linkages between academia and other institutions. Reciprocally, ORIC should play an active role in introducing modern technologies on both sides.

HEC has opened the ORIC office in each higher education institution. It can make linkages with the industry. ORIC arranges visits of students to industry, and it can also arrange visits of experts from

industry to universities. HEC can follow how many linkages ORIC developed in a semester. (P5)

ORIC offices in each university should establish linkages with industry and arrange student visits to provide insights into industry practices and technology use. Experts in smart technologies can also be invited to give talks and engage in debates with students and faculty on the required digital skills. It should be the responsibility of HEC to develop a monitoring and performance evaluation framework for ORIC in facilitating these linkages.

In ORIC, I will say, there are non-relevant people who do not bother about research and such things. A man will be in ORIC because he is the cousin of VC. So this is not a single problem. From top to bottom, everything is wrong. (P12)

Nepotism has a devastating impact on various areas, including ORIC. In many cases, staff in ORIC offices lack research capacity and interest, which hinders the development of strong linkages and the integration of modern technologies. It is highly recommended to appoint staff with relevant skills and a genuine interest.

ORIC can drive Triple Helix Collaboration by linking academia, government, and industry. HEC should develop a monitoring framework to evaluate ORIC's performance. In addition, ORIC staffing should be based on relevant skills and genuine interest.

Discussion

In this section of the report, responses to the relevant research questions are presented based on detailed findings from the participants' interviews and the researcher's reflections. In the previous section of findings and analysis, only participants' views with an identity code were cited. In this section, those findings are supported by in-text citation of previous literature.

Research Q1: What are the Recommendations for Business Schools Curriculum in students' preparedness for Smart HRM in Khyber Pakhtunkhwa, Pakistan?

The findings derived from in-depth interviews provide recommendations for Business Schools to drive Smart HRM 4.0 through coordinated internal mechanisms at the university and departmental levels, while collaborating with external relevant stakeholders. Implementation and continuous improvement in Smart HRM Practices need research for informed strategies with stakeholders' support, and systematic approaches are emphasized by the findings from participants' in-depth interviews. University as in the role of leading digital transformation, has been prescribed by the findings to shoulder the responsibility of raising vigorous awareness and catalyzing the institutional change. To answer Research Question 1, findings from the participants' views are presented in light of the principles of the Qualitative inductive approach with the researcher's reflective interpretation.

Business Schools have to create a strategic quality vision. To improve the quality of their courses, they must align them to support the industry in all aspects for improvement and upgradations, and to fulfill skills needs (Dey, 2024; Alwi & Karim, 2024; Selamat et al., 2025) (P9). When the external body audits the management practices it brings significant improvement in organizations. Business schools have to be accredited with NBEAC to ensure external approval and quality assurance for their organizational practices and processes(Kumar et al., 2020; Abdurrahman, 2021; Iqbal et al., 2025).

University research must be aligned with the real-world smart technologies challenges (Evans et al., 2023; Hailu, 2024) faced by the industry, with a clear focus on Applied research. Thus, the university will play the role of a catalyst for smart technologies in industry(P2). Academia, Research-based data-driven solutions to the problems faced will be offered to the industry for sustained and strengthened linkages(Tereshchenko et al., 2024). Furthermore, policymakers should be enlightened through research insights for better policy making to support business development and a technological transformational ecosystem for Smart HRM (McGuire & Perna, 2023; Suazo-Galdames et al., 2025; P7).

Business Schools should offer Smart HRM courses alongside need-based faculty training and development initiatives (P16) to ensure digitally integrated HRM curriculum delivery (Yulin & Danso, 2025). Teaching Faculty must be trained to use experiential learning andragogic approaches in

learning and skills development for students (Amemasor et al., 2025). Course content should be reviewed to reflect cultural values and market demands (P7). Cultural values must contain social and ethical aspects within the curriculum to inculcate responsible professional collaborative behavior for the work environment and larger social well-being.

Generation Z and Alpha are more tech aware and prone to technology and feel comfortable using digital tools, as they are more tech savvy (Adharsh Elsin & Sathya, 2024; Stefán et al., 2025), thus demanding more technology-based skills (P10). These generations have the basic knowledge and skills of modern technologies; however, they still require more sophisticated and advanced technologies exposure for personal and work life. Therefore, Business Schools have to make sure a more intense infusion of Smart Technology-based courses in the Curriculum to meet their demands(P8). The findings proposed to train students for digital responsibility, cybersecurity, and relevant regulations about data protection and other legal (P18) issues linked to the use of the internet and online technologies to mitigate the risk of harmful use and practices (Matei & Bertino, 2023). Students should also be taught to take preventive measures while using these technologies to avoid any mishaps (Hu, 2024). Business School can embark on the discretionary choices opportunity (P3) provided by HEC in the new business curricula and policy revision (HEC, 2025) to integrate more tech-based courses.

The finding recommends providing course customization to students to make choices for their proposed career interests and needs. Enabling students' course personalization and customization is one of the opportunities provided by Education 4.0 (du Plooy et al., 2024). In addition, modularization of degree programs is suggested (P3). With micro-credentials, every skills-based course certificate is awarded to the student as proof of authentic evidence for skills developed (Varadarajan et al., 2023). Through this approach university and teachers focus on skill development, is increases with additional value to students for having a verifiable and credential certificate from a large, well-known institution. This practice will pave the way for students' early entry to the job market while still studying.

The interview findings also recommended that universities should design and develop a Smart Technology integrated model for their management processes to play a pioneering role in transformation. The University Smart ERP system should manage all the administrative tasks with an integrated module for Teaching and Learning (Sukandi, 2022). Through using these digital systems smartly integrated students will have exposure to these modern tools. In Addition, this system could be showcased for other stakeholders.

The response to Research Question 1 focuses on the strategies and policies that universities must adopt to implement Smart HRM internally, as well as to support other stakeholders in its development and implementation, to fully reap the benefits of Industry 4.0 technologies. Although curriculum implementation primarily lies within the domain of universities, the HEC plays a crucial role in curriculum approval, regulation, and oversight. Therefore, curriculum-related issues are discussed here to draw meaningful conclusions.

The discretionary autonomy granted to universities has, in many cases, resulted in non-mandatory neglect in compliance, as discussed earlier (Singun, 2025). The findings indicate that HEC should enforce Smart-technology-integrated curricula (P3) as a strategic priority (P7). Moreover, the study suggests that HEC should introduce flexible and responsive policies to reduce bureaucratic delays (Barros et al., 2024) in the approval process for innovative curricula proposed by business schools (P14).

Furthermore, the findings reveal that HEC should establish Provincial Committees for Research and Innovation (P7) affiliated with central committees to facilitate the introduction of new courses according to the new demands of the market and local requirements. In addition, HEC is proposed to build innovation and implementation Centers in Universities (Hailu, 2024; P7) to facilitate the transition from traditional systems to modern technologies. The centers, through close linkages with industries, would continuously monitor the output and performance of the system. Thus,

would be able to bring continuous improvement through the trial and error method. Universities have to fulfill infrastructural requirements for launching technology-enriched HRM courses, along with faculty training and development programs for cross-disciplinary content teaching.

Research Q2: Suggest Recommendations for Teachers' Competencies in Smart HRM 4.0 curriculum and its instruction delivery?

The Research Question 2 demands addressing all factors associated with students' preparedness for Smart HRM4.0. Faculty skills for teaching a digital tools-integrated HRM course demand content knowledge and skills coupled with delivery competencies (Howard & Tondeur, 2023). The recommendation insights from participants' views and the researcher's reflection are provided for universities' guidance for future readiness. Many of the participants have stressed that teachers' skills development plays a significant role in students' preparedness, so it has a crucial role. A professionally committed, skilled teacher could overcome infrastructural and course content shortcomings through personal efforts, by developing skills other than routine creative instructional methods to some extent. It is evident from the participants' findings that highlight many instances of teachers' self-initiatives for skills development, even not mandatory in the formal syllabus or required officially. Accordingly, this section focuses on teachers' skills development recommendations for Smart HRM 4.0, which emerged from findings and researchers' reflections.

Universities must make smart technology infusion in HRM courses and also develop course delivery standards(P18). The advancement in technology necessitates prioritizing teacher training; without the relevant and systematic training(P16), teaching these modern courses is not possible. Mere introduction of courses is not enough; meaningful training will ensure the students' preparedness for Smart HRM. Faculty competency development (P14)for integrated courses, besides its delivery skills, is highly recommended (Trujillo-Juárez et al., 2025).

The findings further propose to train and develop teachers in cross-disciplinary courses (Yulin & Danso, 2025), integrating IT and HRM(P16), to effectively balance and incorporate content from both areas to develop a unified merger (Basantes-Andrade et al., 2022; P8).

In addition to formal training programs, the findings from participants' interviews also recommended other strategies for developing the teachers' professional competencies. These include seminar-based (Amemasor et al., 2025), Smart HRM faculty training (P8), and industry exposure through visits and engagement (Pongsakdi et al., 2021; P9). Furthermore, international exposure and benchmarking with globally recognized institutions specializing in smart technology integration are recommended to strengthen andragogical practices and deepen faculty understanding of effective Smart HRM integration (P8).

The findings related to teaching and instructional strategies for Smart HRM 4.0 are discussed in detail to address Research Question 2, which seeks to identify effective strategies for implementing Smart HRM 4.0 in KP business schools in alignment with the Industry 4.0 landscape.

Universities are autonomous in making decisions regarding curriculum delivery (P3). Instructional strategies play a significant role in shaping students' skill development, and it is reasonable to assert that teaching methods are a primary means of building students' competencies (Freeman et al., 2014). For Smart HRM skill development, HRM teachers must be trained using experiential learning approaches (P18). Students grasp the concepts and develop skills through experiential learning easily, with deep comprehension skills. When the student-centered methods are used to provide hands-on practice opportunities, they develop multiple Soft and Hard (technical) skills.

Industry visits are another way to gain real-world workplace exposure, aligning skills learning with industry practice and thus closing the theory-practice gap (Dey et al., 2025). In the same way, course-based assignments that demand the utilization of Smart Technologies (P20) also help to develop students' skill sets. These type of mini-projects (Tarun et al., 2024) engages students in

real-world problem solving and ultimately do mental training for learning applied knowledge and skills.

Developing strategies other than formal classroom instruction discussed above are beneficial for both types of courses, whether digital technologies-based courses are part of a formal syllabus or are not included in degree credit hours. In addition to these strategies, other methods could also be employed to develop Digital Technologies competencies beyond the designed and planned syllabus (P7). Approaches that enhance learning of knowledge and skills, but are not part of formal classroom teaching or not part of an institutionally planned curriculum, include internships, to have practical experience of workplace practices, besides attitude and behavioral skills development. Meetings and Interviews with Industry experts are another very effective way to have Business Environment insights. These engagement techniques with practitioners significantly improve students' readiness for real market demands(Jackson, 2015; Timming & Macneil, 2023).

Furthermore, HEC Policy (HEC, 2023) allows universities to accredit MOOCs and other online platform courses to give weightage in a formal degree, with required credit hours. The approval of courses, alignment with the discipline, and weightage evaluation are at the discretion of universities. Students should be allowed to benefit from these supporting services for their modern technology skills development.

Research Q3: What are the recommendations for the Infrastructural needs of Universities' Business Schools to offer Smart HRM courses?

Smart HRM4.0 courses introduction in the Business School has an infrastructural requirement to ensure students' preparedness in the IR4.0 environment. The participants' views revealed strong proposals for the upgradation of infrastructure(Joshi et al., 2025), while the discussion on Business Schools' readiness has shown some lapses. It is the duty of the universities to arrange necessary Technological infrastructure (Hidayati, 2022), Smart HRM teaching and learning, alongside creating industry linkages to facilitate Digital Transformation (P18).

The recommendation for proposed for Business School readiness also emphasized Specialized HRIS software in Business Schools to provide hands-on practice opportunities for students. Supplementary to this, a dedicated computer lab for business students (P12) is also identified as a vital necessity for Business Schools. Otherwise, hours of access to be extended for business students to have ample time for practice.

Moreover, the findings suggest that the University IT Cell (P9) should play an active role in proposing recommendations for new technologies advancement and their fusion in foundational courses' content. The IT Cell should also propose infrastructural requirements to the university Leadership and Management for availability. The development of the University ERP system, working mainly as a Management Information System (MIS) (P13), is also proposed to be developed with the inclusion of a Teaching and Learning module supporting academic processes.

The university HRIS is strongly proposed to be developed for internal managerial services to serve two purposes. The system could be used for students learning about existing features, and students could be assigned the task to suggest further improvements in functions. This would increase the students' problem-solving skills besides upgradation to existing system. Secondly, the internal robust system could be showcased for other stakeholders. This showcasing will increase the reliability of the solutions proposed to the industry. Ultimately, it would build industry trust for more solutions and would increase the dependency of university research and development for innovation and marketing edge.

Universities are suggested to allocate finances for Smart Technologies inclusion in Higher Education (P8). Universities are recommended to work on an entrepreneurial model for sustainable (P17) financial status. Universities have to market high-value courses and degrees to generate funds. Secondly, in entrepreneurial initiatives, efforts also have to be made to market research-based innovative ideas and their development. In short, academic programs and applied research-based

ideas and innovation would be products of universities in the entrepreneurial model. The financial self-sustainability is only possible through this entrepreneurial model in these turbulent times for Public universities.

ORIC, established in every university under the directives of HEC, has the responsibility to strengthen the Academia-Industry Linkages. This responsibility demands raising awareness in academia about the industry practices and the problems faced by Business and Industry. The university research should respond to these real-world problems. ORIC's role is to present these applied and workable solutions to industry for implementation.

ORIC would play a role in driving Triple Helix Collaboration (P1) among government, academia, and industry. Applied research in universities and innovation in industry practices, which lead to advanced products and services, are not possible without this collaboration, besides supportive policymaking. ORIC activities have to be monitored through defined standards, and rubrics with strong oversight by HEC are also recommended (P5).

Furthermore, the Findings recommend ORIC staffing (P12) on merit, based on relevant degrees, skills, and interest in research and innovation. Competent staff with a growth mindset orientation are essential, together with networking and human relations building skills.

Implementing these recommendations will enable Business Schools in KP to follow a strategic vision for strengthening academic courses and will lead to the application of research practices. Through these Business Schools, students will be well-trained in Smart HRM 4.0 to better align human resource practices with the IR 4.0 landscape.

Summery

The study has explored the recommendations for Business School readiness for students, Smart HRM4.0 skills upgradation. Business Schools should develop a strategic vision aligned with industry, business, and technological advancement. The vision should encompass full support for business and industry growth. This vision must be a guidance source for technological advancement and social values-based curriculum design and development. The Generation Z and Alpha are more tech-savvy and feel comfortable using modern technologies. The curriculum should be designed to meet the demands of these generations. Elective university discretionary courses should intensify digital skills development. It is also highly recommended to include content in courses on digital citizenship with responsibilities. Along with laws and regulations of cybersecurity and data safety & security. Universities are proposed to seek NBEAC accreditation, which will serve as an external quality assurance tool for market-based curriculum and effective content delivery. The accredited university will try to meet the market demands to enhance graduate employability to meet the audit survey demands by NBEAC. The participants have recommended that universities develop a state-of-the-art, advanced technology-based ERP to serve students' learning and showcase for stakeholders.

HEC must develop a policy and framework to prioritize smart technology embedded courses with a clear implementation roadmap. HEC must establish provincial committees for the local needs of research and innovation. These committees should provide support, based on local industrial needs, for curriculum development. Along with the proposals for the development and advancement of local universities.

Management and Governance bodies in Business education should prepare teachers for digitally integrated HRM courses. Alongside the course contents, knowledge, and skills, the professional development of teachers should also be a priority. The business governing body, in collaboration with universities, must also employ other means besides formal training for knowledge and skills development, like arranging seminars on these advanced technologies. The faculty visits to technology-rich businesses and industry are proposed based on findings. Furthermore, faculty visits to foreign institutions, especially those famous for their technological reputation, are recommended. The university's responsibility for raising awareness among all stakeholders, including policymakers, industry, teachers, and

students, is also emphasized based on participants' findings.

Practical knowledge and skills development require experiential learning strategies like project-based learning for hands-on job practice. It is recommended to train teachers in these experiential learning methods and ensure their implementation in teaching the Smart HRM courses. Besides the formal teaching, informal methods should also be mandated. Industry visits and technology-based mini projects are other proposed methods. Meeting industry experts and interviewing personnel from tech-rich environments is also essential. Additionally, MOOCs provide flexible opportunities to learn modern skills, further enhancing capabilities in technology utilization.

The findings suggest that universities should provide dedicated labs for Business Studies. HRIS software must be made available for student practice. The university IT cell should be the driving force behind course innovation. Furthermore, universities should develop and implement their own ERP systems with HRM modules for student learning and stakeholder demonstrations. To fund technology integration, universities should adopt an entrepreneurial model for revenue generation.

ORIC at the helm should drive the Triple Helix collaboration between Government, Academia, and Industry. HEC has to oversee the Industry-Academia synergy created by ORIC to increase its efficiency.

6.1 Limitations of the Study

This study explored the findings comprehensively within the defined scope, with deliberate efforts made to meet the required quality standards of qualitative research. Nevertheless, like all research inquiries, the present study has certain limitations. These are outlined below to support appropriate understanding and interpretation of the findings.

- The geographical scope of the study was Khyber Pakhtunkhwa, and some of the respondents' claims that this province is trailing regarding HRM practices with Smart HRM inclusion. The same study has to be done in other provinces to have a clear picture of Pakistan, university readiness practices, and strategies.
- The population of sampling was teachers, quite suitable for the scope of this study for the recommendations to University Readiness. Other bodies involved in education management must also be interviewed for this purpose to reach a comprehensive conclusion. What would be the implementation and maintenance according to their perception? It is recommended to follow a qualitative inductive approach to fully understand the phenomenon.
- It is a limitation of the study that the opinion of the ORIC officers has not been sought to know their side of the story. What skills and competencies are needed in the office staff to efficiently perform their duties? What are their suggestions for strong relationship building? Are studies required even to identify the KPIs for ORIC Offices with a monitoring mechanism (as this is the subject matter of the HRM)?
- NBEAC and HEC leadership and management also need to be interviewed to know the perceptions for the integration of Smart Technologies.
- Comparative studies with other countries will be required to understand their drive for smart technologies. Europe and Malaysia can be benchmarked with other countries' inclusion. National Policy for Education and the University's role for Smart HRM teaching and implementation to understand how they respond to this cross-disciplinary area of studies? How are other countries scaling up to meet the technology-integrated classes, their instructional delivery infrastructure, mini projects, and internship programs? Research other countries through a systematic paper review, a comparative study to understand their implementation strategies in comparison to this study recommendation.
- Students also need to be interviewed for the skills learning in Smart HRM and Digital tools usage, accessibility to HRIS, and assignment style and type. This could be coupled with course contents evaluation and assignments given to the students on their topics and their

formats for submission to check whether the Smart HRM is focused or not.
- It is the limitation of the study to seek the University leadership's point of view on these perceptions. Studies are required to explore the vision of the leadership for Smart Technologies inclusion.
- Study to know the skills needed. A TNA-type study to know the exact skills gap for teachers.

6.2 Recommendations

The government has to take steps to formulate a policy for the central committee with provincial or university-level sub-committees to prioritize Smart Technologies as a national industrial upgradation move. Government policy must include 4IR technologies as an educational priority. HEC and other bodies have to be envisioned to include social values development and technology integration in the curriculum as their prime priority.

HEC has to develop a national higher education framework with the inclusion of more technology-based courses in business curricula, including in the HRM major. It is recommended to make it mandatory and not leave it to choice. HEC, through NBEAC, also ensures that the accreditation process includes an evaluation rubric design, to give high priority to the technology inclusion in Business Curricula with special emphasis on Smart HRM. HEC has to streamline policy for new course approval to reduce bureaucratic delay. Micro credentials and course modularization are proposed for the current market need and students' early entry to the job market. Interdisciplinary course choices for students have to be more flexible, and easy customization could be made by students.

Universities have to include Smart HRM4.0 courses in the curriculum. Develop faculty capacity for teaching tech-embedded HRM courses. The teacher has to be trained for experiential-based teaching. With opportunities for students to have hands-on job practical activities. It is also recommended to make strong relations with the industry to understand the skills needed and provide students with workplace exposure. Universities must upgrade their infrastructure for teaching and learning. Dedicated labs for Business Studies are recommended. An HRM-based module ERP/HRIS system for the management processes is proposed. Besides, students' support in learning it also has implications to showcase to other stakeholders.

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