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Assessing the Current State of Scientific Research Management at Universities of Physical Education and Sports in the Context of Digital Transformation

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ABSTRACT: Scientific research plays a vital role in education in general and higher education in particular. In the current landscape of Vietnam's higher education, scientific research is considered one of the key pillars in enhancing training quality and developing a workforce that meets the increasing demands of society. The objective of the research is to assess the current state of scientific research management at universities of physical education and sport within the framework of digital transformation. The study employs document synthesis and analysis, interviews, and statistical analysis to fulfill the research objectives. The survey subjects are 265 administrators and lecturers from physical education and sport universities. The research results show that the schools have built a fairly effective system of planning, objectives, and management processes for Scientific Research; the organization, inspection, evaluation, and publication of research results have been standardized. Some limitations in managing research activities include insufficient investment in resources, inadequate training in research capacity, and underdeveloped digital infrastructure; improvement activities have not closely aligned with practical realities. The enhancement of lecturers' research capacity has received insufficient attention, and there has been no investment in building new facilities or upgrading infrastructure, such as laboratories and libraries, or in improving the quality of activities and the use of facilities.

KEYWORDS: Current status, management, scientific research, physical education, digital transformation.

1. INTRODUCTION

In the context of globalization linked to the Fourth Industrial Revolution, digital transformation is not just a trend but has become a key driving force in comprehensively restructuring various sectors of socio-economic life. [1]. This process profoundly changes the way knowledge is created, transmitted, and utilized, thereby necessitating a shift in the development model of higher education toward being flexible, open, and quickly adaptable to the digital environment. In that context, management and training activities are no longer limited to traditional methods but are shifting toward an intelligent governance model, based on data and digital connectivity, contributing to enhanced efficiency, transparency, and personalization in education.

Especially, the convergence and interaction of digital technologies such as Big Data, Artificial Intelligence (AI), the Internet of Things (IoT), and Virtual/Augmented Reality (VR/AR) have created systemic transformations in the field of physical education. Not only do these technologies support the optimization of scientific research and training through motion data analysis, but they also fundamentally change the assessment and evaluation methods toward continuous, objective, and personalized approaches while expanding the teaching space from the real environment to a combination with the virtual environment, contributing to enhancing the learning experience and the effectiveness of physical development for learners on a global scale [2], [3].

The strategic orientation for this transformation process has been clearly institutionalized in Resolution No. 57-NQ/TW, signed by General Secretary To Lam on December 22, 2024, which emphasizes the need to make breakthroughs in the development of science, technology, innovation, and national digital transformation [4]. This is not only a macro orientation but also an important political foundation for various sectors, including education and physical education, to implement innovative solutions in a synchronized and systematic manner.

To concretize this policy, the Government issued Decision No. 749/QĐ-TTg approving the "National Digital Transformation Program until 2025, with a vision toward 2030" (June 3, 2020), thereby establishing key tasks in the education sector: developing remote teaching platforms and digital learning ecosystems; promoting the application of technology in management, teaching, and learning; accelerating the digitization of learning materials and curricula; and building mechanisms for sharing educational resources in both direct and online forms. The program also emphasizes the need to develop technological solutions to support personalized training, thereby better meeting the needs, capabilities, and individual characteristics of each learner in the context of modern education [5].

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Scientific research activities play a particularly important role in education in general and higher education in particular. This is an important activity for each lecturer in higher education institutions [6]. In the current higher education system in our country, scientific research (SR) is considered one of the important pillars in enhancing the quality of education, creating a workforce that meets the increasingly high demands of society [7].

Article 62 of the 2013 Constitution of the Socialist Republic of Vietnam states: "The development of science and technology is the top national policy, playing a key role in the socio-economic development of the country." [8]

The Education Law No. 43/2019/QH14 dated June 14, 2019, continues to affirm that "scientific and technological activities are the responsibilities of higher education institutions," and "the State creates conditions for educational institutions to engage in scientific and technological activities, combining training with scientific research and production to enhance the quality of education."; building educational institutions into cultural, scientific, and technological centers of the locality or the entire country," "The State has policies prioritizing the development of scientific and technological activities in educational institutions [9].

Physical Education and Sport Universities are specialized higher education institutions that train and develop human resources in physical education and sports, conduct scientific research, and transfer technology in physical education and sports to meet the needs of development and integration. In recent years, the scientific research activities of schools have contributed to improving the quality of physical education and sports, enhancing the effectiveness of educational and training work for the schools. However, alongside the achieved results, the scientific research activities of universities that train physical education teachers still have limitations and shortcomings, such as a lack of qualified lecturers and researchers; the facilities and equipment for scientific research activities need to be significantly invested in; there are no joint research projects with international partners; the inspection and supervision work has sometimes been ineffective… [10], [11]. Therefore, to propose solutions to enhance the effectiveness of managing scientific research activities at physical education and sport universities, we conducted a study:

"Assessing the Current State of Scientific Research Management at Universities of Physical Education and Sports in the Context of Digital Transformation."

2. RESEARCH METHOD

2.1. Research subject

265 Management staff and lecturers of physical education and sport universities

- Sample selection criteria: all management staff and lecturers of Hanoi University of Physical Education and Sports and Ho Chi Minh City University of Physical Education and Sport.

- **Exclusion criteria:** managers and lecturers who do not agree to participate in the survey.

2.2. Research method:

- **Research design:** cross-sectional descriptive
- **Research period:** from June 2023 to April 2024
- **Sampling method:** convenience sampling
- **Research content:** The survey questionnaire on the current state of scientific research management at physical education and sport universities in the context of digital transformation includes the following content:

+ Survey respondent information: year of birth, gender, workplace unit, position, and educational level.

+ Investigating the current state of scientific research management: planning research activities, implementing research activities, evaluating research activities, and improving research activities.

- Survey data collection method: The data was collected by the author using a survey form in the form of a Google Form application, combining both online and direct collection. Survey respondents will answer 13 questions with the following main content: General information about the survey participant; purpose of the scientific research activity; the role of scientific research activities; advantages and challenges in scientific research activities; factors affecting scientific research activities; tasks of scientific research activities; the current state of management of scientific research activities in the form of a 5-point Likert scale depending on the survey criteria. The data is presented in terms of percentage, mean score, and frequency; the results are processed using EPI Data and SPSS 22.0.

3. RESEARCH RESULTS

3.1. The current situation of planning scientific research activities at physical education teacher training universities

The results of the survey on the planning of scientific research activities at physical education teacher training universities are presented in Figure 1.

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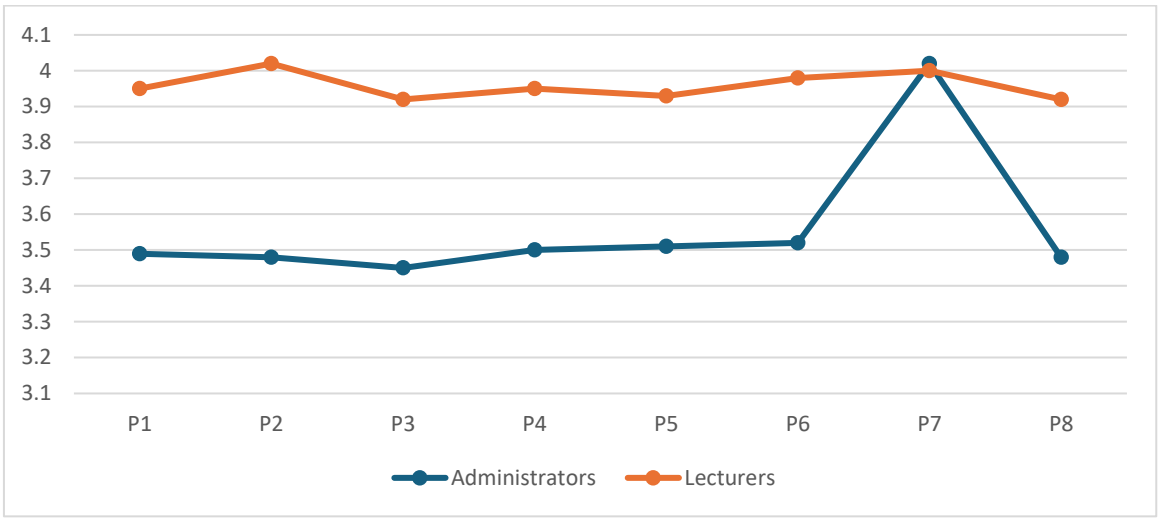


Figure 1. Current situation of planning scientific research activities in physical education and sport universities in the context of digital transformation

P1: Determine the direction and objectives for the scientific and technological activities of each major.
P2: The school has developed a scientific research activity plan.
P3: Scientific research activities plan aligns with the school's goals, mission, and vision.
P4: Focus on scientific research linked with the training program
P5: Build a system of documents and a program to manage detailed scientific research activities.
P6: Fully disseminate the school's scientific research management document system to relevant parties
P7: Have a clear plan for investing resources (human resources, equipment, funding, etc.) for scientific research activities
P8: Determine the implementation timeline (by year, by quarter, by semester, by month…)

The survey results show that the opinions of the two groups, administrators and lecturers, are quite similar regarding the criteria for planning scientific research activities at physical education teacher training universities. However, the results displayed in the figure show that the feedback from the management staff (represented by the blue line) is lower than the feedback from the teachers (represented by the orange line). Thus, it can be seen that the evaluation of the management staff is lower than that of the teachers in the criterion of planning scientific research activities. The survey results also show that the majority of lecturers and administrators evaluate the construction of scientific research activity plans at physical education and sport universities as being implemented quite well, with an average score of 3.55 for administrators and 3.96 for lecturers. Thus, it can be seen that the Hanoi University of Physical Education and Sport has identified the task of scientific research as an important mission of universities, has grasped the development trends of scientific research activities at the schools, and has set research objectives that are suitable for the conditions of the University of Physical Education and Sport.

To build and develop each school, there is a mission, vision, and specific development goals that guide all the school's activities toward that goal. Although there may be changes suitable to the conditions and actual situations in each school, during the process of formation and development, each school creates its own values and cultural traditions. The survey results on the content " Focus on scientific research linked with the training program" of physical education and sport universities were rated 3.62.

The content "Having a clear plan for investing resources (human resources, equipment, funding, etc.) in scientific research activities" is rated 3.42. This index reflects a fairly high level of awareness, but it does not truly correspond to the requirements for developing scientific research in the context of higher education reform and current academic integration. In reality, although many lecturers and administrators have recognized the strategic importance of scientific research activities, there remains confusion and a lack of clarity in defining the roles and responsibilities, as well as the direct and indirect benefits of the participating entities when implementing them in practice.

The ambiguity in understanding the roles and benefits of teachers and administrators in scientific research activities poses a risk of diminishing the effectiveness of implementing strategic plans, especially in physical education and sport universities – where scientific research activities need to be closely linked with the practical training, teaching, and development of sports science. Therefore, clarifying the roles, rights, and responsibilities of each entity, from lecturers and administrative staff to the Board of Directors, is a prerequisite to ensuring the feasibility and effectiveness of the scientific research development strategy.

From a long-term strategic perspective, developing a plan for scientific research activities should be seen as a future-oriented direction for the school, requiring a unified mindset and awareness throughout the entire management system. This unity needs to be regularly reinforced through scientific conferences, specialized workshops, and academic forums to create consistency in approach, planning, and implementation.

In addition, the development of the scientific research strategy needs to be based on a comprehensive analysis of internal and external factors, prioritizing the promotion of the unique strengths of physical education and sport universities while gradually addressing the limitations in resources, scientific research capacity, and incentive mechanisms. In addition, the development of the scientific research strategy needs to be based on a comprehensive analysis of internal and external factors, prioritizing the promotion of the unique strengths of physical education teacher training universities while gradually addressing the limitations in resources, research capacity, and incentive mechanisms.

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Based on that, universities need to develop investment plans and allocate resources in a specific, transparent, and strategic manner, including financial resources, research personnel, facilities, and academic incentive mechanisms. This is the key condition to realize strategic goals and enhance the quality and effectiveness of research activities in physical education and sport universities at a higher level of development.

3.2. The current status of implementing scientific research activities at physical education and sport universities

The results of the survey on the current status of scientific research activities at physical education teacher training universities are presented in Figure 2.

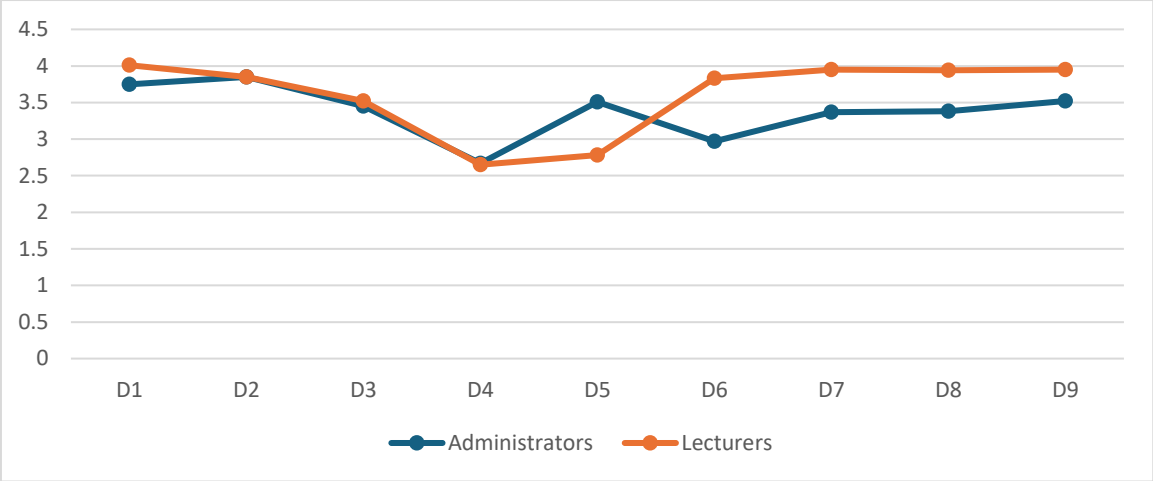


Figure 2. The current status of implementing scientific research activities at physical education and sport universities in the context of digital transformation

D1: Developing procedures and guidelines for implementing scientific research activities

D2: Hierarchical management of scientific research activities logically

D3: Selection, gathering, and assignment of personnel participating in research activities

D4: The school organizes training courses to implement research activities for lecturers and management staff

D5: Investing in equipment to carry out scientific research activities.

D6: Invest in scientific research activities

D7: The school implements many policies to support, encourage, and motivate lecturers and staff to participate in scientific research activities.

D8: Units and departments grasp and actively implement scientific research activities according to the approved plan. plan.

D9: Units and departments coordinate and support each other in conducting scientific research activities.

The survey results show that the majority of managers and lecturers evaluate the organization and implementation of scientific research activities at physical education teacher training universities as quite good. This reflects that most higher education institutions have established organizational systems and directive mechanisms to ensure that scientific research activities are implemented relatively synchronously and meet the basic requirements in management and execution.

However, the survey data also indicate some noteworthy limitations in the implementation process. Specifically, the school's level of interest in organizing training courses and capacity-building programs for lecturers to implement scientific research is still not commensurate, as reflected in the average score given by management staff, which only reached 2.65. In addition, the investment in equipment for scientific research activities remains low, with an average score of 2.78, indicating barriers in material conditions that hinder the improvement of research quality and effectiveness, especially for experimental and applied studies in the field of sports science.

Notably, the level of proactivity and positivity of the units and departments in implementing the research activities according to the issued plan was rated by the management at an average level (average score = 2.97), while the group of lecturers had a significantly more positive assessment (average score = 3.83). This discrepancy indicates a gap in perception and evaluation between the two groups, reflecting differences in management perspectives and practical experiences during the implementation of scientific research.

On the other hand, the development of procedures and guidelines for implementing scientific research activities received high consensus from both groups. The management staff rated this content with an average score of 3.75, while the lecturers rated it higher, achieving 4.01. This result affirms the important role of a clear system of procedures and guidelines in creating a legal and academic framework for scientific research activities at universities.

Considering the Do phase (implementation) in the management cycle, the reality at some major higher education institutions shows that the management and implementation processes for scientific research projects are still not fully developed and rely heavily on administrative procedures. Based on the prioritized scientific and technological research orientations and the established project selection criteria, units, collectives, and individuals proactively propose and register projects according to the prescribed template. The sectoral and inter-sectoral councils hold meetings to review, select, and prioritize key projects. From there, the department in charge of science and technology compiles and selects several topics to present to the leadership for approval to organize a public selection.

Through the analysis of the system of legal documents on scientific and technological activities (S&T), it shows that in recent years, the Party and the State have increasingly demonstrated their concern in improving the policy and legal environment to promote the development of

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S&T. Science and technology activities in Vietnam have been undergoing a strong reform and innovation process, aiming to enhance the efficiency of research, application, and knowledge transfer in the context of socio-economic development and international integration.

Currently, investment resources for scientific and technological activities in Vietnam mainly come from the state budget, which is clearly reflected in the regulations on investment and financial mechanisms for scientific and technological activities. On average annually, the expenditure from the state budget for S&T reaches about 1.4–1.85% of the total state budget expenditure, equivalent to 0.4–0.6% of GDP. The state has established a principle to ensure that spending on S&T is at least 2% of the total annual state budget, indicating an increasing priority for this sector.

Table 1. Statistics on funding for scientific and technological activities from the state budget

Criteria	**Total state budget expenditure**	**Among them: Regular expenses**		
		Total	**Among them: Science and Technology Expenditure**	
Year			Value	Share (%)
1	*2*	*3*	*4*	*5 = 4/2*
2020	1.748.543.144	961.529.000	16.059.194	0,9
2021	1.478.683.759	1.023.401.000	24.753.198	1,7
2022	1.503.836.682	1.000.451.659	13.575.049	0,9
2023	1.753.588.800	1.067.339.000	13.556.697	0,8
2024	1.882.813.000	1.263.810.000	12.274.502	0,7
The first 7 months of 2025	1.121.734.300	800.772.000	8.488.486	0,8

Source: Annual report of the State Treasury

https//orcid.org/0000-0001-8174-7349

Currently, financial resources allocated for science and technology (S&T) in Vietnam are mainly distributed according to a mechanism linked to the budget-using units, reflecting an administrative and average distribution approach. This method, by nature, does not yet rely on the strategic priority level, academic value, or social impact of research programs and projects. The consequence is that funding for scientific and technological activities has not been allocated selectively through competitive mechanisms based on the quality of the topics, the urgency of the research issues, as well as the actual capacity of the experts and research teams involved.

The lack of allocation mechanisms based on scientific evaluation and academic competition has diminished the motivation to enhance research quality, while also failing to create an environment that encourages scientists to continuously improve research efficiency and standards. In the context of physical education and sport universities, this is particularly noteworthy because many interdisciplinary and highly applied research directions (such as movement science, sports physiology, sports medicine, coaching technology) require concentrated and stable resources, led by exceptionally capable research teams. From the perspective of physical education and sport universities, this context necessitates an urgent restructuring of the allocation and utilization mechanisms of scientific and technological resources toward a centralized, competitive, and capability-based approach, while also enhancing the role of universities in training and supplying scientific human resources capable of receiving, adapting, and innovating technology. This, in turn, contributes to improving the efficiency of scientific and technological investment and promoting the sustainable development of the research and innovation ecosystem.

3.3. The current state of monitoring scientific research activities at physical education and sport universities

The survey results on the content of research activity evaluation at physical education and sport universities are presented in Figure 3.

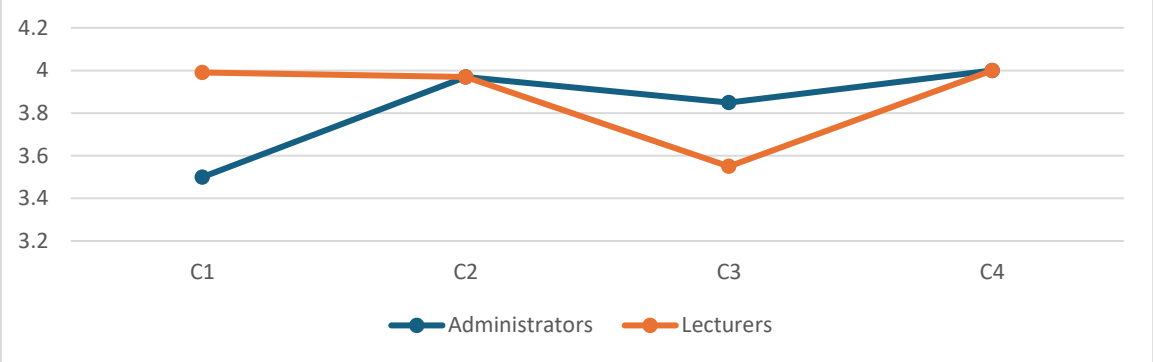


Figure 3. The current state of monitoring scientific research activities at

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physical education and sport universities

C1: The school organizes progress checks every 6 months and 12 months, with clear and fair evaluations.

C2: The school conducts a review of research activities to meet the initial standards.

C3: The school conducts comparisons and evaluations of research activities with domestic and international universities.

C4: The school announces and publishes the research results.

The survey results shown in Figure 3 indicate that the inspection and supervision of scientific research activities at physical education teacher training universities are rated as quite good by both groups of respondents, namely management staff and lecturers. Specifically, the contents include organizing progress checks every 6 and 12 months; conducting comparisons and evaluations according to a clear process, ensuring fairness and meeting output standards; as well as comparing and evaluating research and development activities with domestic and international universities, all achieving an average score of 3.52 or higher. This reflects that the system of testing and evaluating scientific research at schools has gradually been standardized and is operating relatively efficiently.

At the same time, the survey results also show a very high level of interest from both management staff and lecturers in announcing and publishing research results. This content was rated by management staff with an average score of 4.03 and by lecturers with a score of 4.01, indicating a high level of consensus on the role of scientific publication as an important indicator reflecting the quality, academic reputation, and dissemination level of scientific research activities in the school.

Considering the Review phase of the management cycle, the implementation practices at some major higher education institutions show that the process of monitoring the progress of scientific research projects is organized relatively tightly and systematically. Accordingly, after one year of implementation, the project leader is responsible for preparing a progress report and submitting it to the scientific management department (technical part) and the financial department (funding part). Progress reports typically include core contents, such as the extent of research activities conducted compared to the commitments made in the outline and contract; summarize the main research results achieved; report in detail on the funding usage situation; the difficulties and obstacles in expertise and implementation conditions; proposals and solutions to overcome difficulties; along with the implementation plan for the next phase.

3.4. The current state of improving research activities at physical education and sport universities

The results of the survey on the current status of improving research activities at physical education teacher training universities are presented in Figure 4.

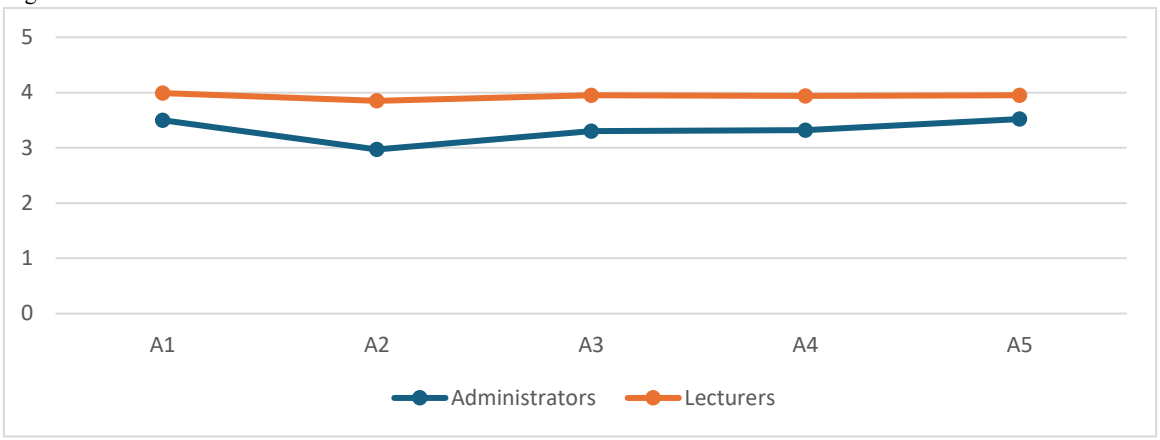


Figure 4. Current status of improving research activities at physical education and sport universities

A1: The school is considering adjusting scientific research activities.

A2:The school is developing a plan to improve scientific research activities based on the evaluation and review results.

A3: The school issues supplementary documents, adjusts the strategic plan and the implemented output standards, and sets the main targets to strive for in scientific research activities.

A4: The school is implementing a plan to improve scientific research activities.

A5: The quantity and quality of the school's scientific research activities have improved year by year.

The survey results shown in Figure 4 indicate that the improvement of scientific research activities at physical education and sport universities is rated as fairly average by both groups of respondents: management staff and lecturers. Notably, the content of the plan to improve research activities based on evaluation results and output standards only achieved an average score of 2.97 according to the assessment of the management team. This result reflects the limited connection between the evaluation work and the improvement process, indicating that the evaluation results have not yet been effectively transformed into governance decisions and specific action plans.

In addition, the contents related to issuing supplementary documents, adjusting the strategic plan and the implementation output standards, the main striving indicators in research activities, and the implementation plan for improving research activities were also rated by the management group at an average score of 3.3 and 3.32, respectively. These indicators show that although the school has made certain efforts in adjusting strategies and organizing improvements, the level of proactivity, systematic approach, and effectiveness of the improvement activities still do not fully meet the requirements of the quality assessment standards for research activities in higher education.

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The above results emphasize the necessity of physical education teacher training universities to enhance and improve research activities based on evidence, ensuring a close connection between evaluation, output standards, and the planning process – Implementing the research development strategy. Considering improvement as a central aspect of scientific research management not only aims to meet quality assurance requirements but also contributes to enhancing academic capacity and the sustainability of research activities.

Considering the Act (improvement) phase of the PDCA cycle, based on the identification of shortcomings and limitations in scientific research activities, universities have periodically adjusted the system of documents, project selection processes, implementation plans, and research evaluation criteria. However, in practice, a clear regulatory mechanism for adjustments and improvements when specific issues arise has not yet been established, and a culture of continuous improvement within the units has not been sustainably developed. This limits the effectiveness of improvement measures and necessitates the establishment of mechanisms to encourage, bind responsibilities, and spread a continuous improvement mindset in the management of scientific research activities at physical education and sport universities.

4. CONCLUSION

The current situation is that the schools have built a fairly effective system of planning, objectives, and research management processes; the organization, inspection, evaluation, and publication of research results are gradually being standardized, contributing to increased transparency and academic prestige.

The management of scientific research activities at physical education and sport universities still has limitations such as the investment of resources, the training of research capabilities, and digital infrastructure not meeting the requirements for developing scientific research in the context of digital transformation; Improvement activities lack binding mechanisms and a culture of continuous improvement, limiting the sustainability of research management, as they are not based on evaluation evidence. There has not been sufficient attention given to enhancing the scientific research capacity of lecturers in conducting scientific research projects and the ability to publish research results; nor has there been investment in building new facilities or upgrading infrastructure such as laboratories and libraries, and improving the quality of activities and the use of facilities.

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