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ENHANCING RESEARCH EFFICIENCY AND EFFECTIVENESS: INSIGHTS INTO BEST PRACTICES OF U.S. UNIVERSITIES

This study aimed to explore the best practices employed by U.S. universities to enhance research efficiency and effectiveness and to determine their adaptive potential for Ukrainian higher education institutions. A systematic review methodology was employed, incorporating a keyword-based strategy and a structured search process. Predesigned criteria were used to select and exclude sources, and raw data was extracted for evaluation based on these criteria. Qualitative methods were employed to synthesise the data. The findings highlight several key factors that contribute to research efficiency and effectiveness. Interdisciplinary collaboration has emerged as a crucial element, with practices that facilitate the integration of knowledge and interaction across various domains and stakeholders demonstrating significant levels of transferability. Research funding and legal considerations were identified as significant contributors to research efficiency. Understanding the impact of funding source changes, complying with federal regulations, and ensuring transparency in fund utilisation were found to be crucial for maximising research productivity. Strategies related to research funding and legal considerations exhibited moderate transferability levels. Knowledge management practices and tools and their utilising for knowledge creation, visualisation, and retrieval were identified as beneficial for research processes and outcomes as they offer guidance for effective knowledge management strategies in higher educational institutions. These practices demonstrated moderate transferability levels. Collaboration among universities, industries, and government entities was highlighted as vital for driving innovation and knowledge creation in universities. Strategies fostering university-industry-government interactions, promoting entrepreneurship, and supporting innovation ecosystems exhibited high transferability levels. The role of research administrators in supporting researchers and managing research projects was recognised as crucial. Providing training, increasing awareness, and offering ongoing education opportunities for research administrators were identified as strategies with high transferability levels, contributing to improved research outcomes.

Key words: research efficiency, research effectiveness, U.S. universities, innovation, collaboration, technology, funding, interdisciplinary research.

Introduction. In the dynamic and competitive landscape of research today, universities hold a crucial position in fostering cutting-edge research and driving innovation [Rosowsky], [Sarpong, et al.], [United Nations]. With the increasing complexity and multidisciplinary nature of knowledge generation, it is imperative for universities to continuously enhance their research efficiency and effectiveness [Huenneke et al.], [Jahanian]. This not only contributes to bolstering their academic standing but also plays a significant role in advancing society as a whole. Consequently, the need arises to share the best practices employed by leading universities worldwide, particularly those in the United States, in order to optimise research processes at higher educational institutions in Ukraine [Shykhnenko & Sbruieva].

By examining the strategies, approaches, initiatives and training programmes implemented by these institutions, this study aims to acquire valuable insights that can inform and guide academic institutions on a global scale. The concept of research efficiency and effectiveness encompasses various facets of the research process, spanning from acquiring funding and allocating resources to fostering collaboration and disseminating knowledge [Hinrichs-Krapels & Grant]. Focusing on the context of U.S. universities acknowledges the diverse and thriving research ecosystem characteristic of these institutions, which epitomise a strong commitment to research excellence and innovation [Heaton et al.]. Therefore, it becomes relevant to identify and analyse

the key factors contributing to research efficiency and effectiveness within U.S. universities through a comprehensive review of existing literature, case studies, and empirical data. Moreover, exploring the role of technology, interdisciplinary collaboration, funding mechanisms, research infrastructure, vocational training programmes for future research administrators and institutional support becomes crucial in understanding how research efficiency and effectiveness can be advanced. This study aims to bridge this gap by examining successful initiatives and innovative approaches implemented by U.S. universities, thereby unearthing novel ideas and practices that can be adapted and implemented in diverse academic settings.

Analysis of relevant research. Relevant literature reveals historical, theoretical, technological, interdisciplinary collaborative, economic, financial, legal and training research administrators-to-be perspectives of research best practices of U.S. universities. The historical perspective highlighted in the relevant scientific literature regarding the topic of enhancing research efficiency and effectiveness in U.S. universities focuses on the evolution and development of research practices over time [Foltz et al.], [Kupriyanova et al.]. Scholars have examined the historical trajectory of research in universities, tracing its growth, transformation, and the emergence of best practices [Gorman]. This perspective sheds light on the historical factors that have shaped the research landscape in U.S. universities.

The theoretical perspective emphasised in the relevant scientific literature revolves around various theoretical concepts that underpin the understanding of research efficiency and effectiveness in U.S. universities [Goetze]. Scholars have drawn upon theories and models from disciplines such as organisational theory, innovation studies, knowledge management, and research policy to analyse and explain the factors influencing research efficiency and effectiveness [Boswell & Smith], [Dei et al.], [Joullié & Gould]. These theoretical perspectives provide a foundation for understanding the complex dynamics and interrelationships between different elements of research processes and offer framework for assessing and improving research performance. Additionally, scholars have also explored theoretical issues related to interdisciplinary collaboration, technology adoption, funding mechanisms, and research infrastructure as key factors in enhancing research efficiency and effectiveness [Clark & Wallace]. Theoretical perspectives guide researchers in conceptualising and studying research practices, identifying key variables, and proposing interventions and strategies to optimise research processes.

Technological advancements have emerged as critical drivers of research efficiency and effectiveness in U.S. universities [Huang], [Foltz et al.]. These institutions have embraced digital tools and platforms that streamline research workflows, enable efficient data analysis, and facilitate interdisciplinary collaboration [Parti & Szigeti]. According to Park [Park], by leveraging technologies such as big data analytics, artificial intelligence, and machine learning, U.S. universities have accelerated the pace of discovery and innovation. Exploring successful technological implementations within these universities offers valuable insights for other academic institutions seeking to optimise their research processes.

Interdisciplinary collaboration has also been identified as a significant factor in enhancing research efficiency and effectiveness. U.S. universities have recognised the importance of breaking down disciplinary silos and have established research centres, initiated joint projects, and developed interdisciplinary training programmes [Reinholz & Andrews]. Roscorla [Roscorla] claims that these initiatives foster knowledge exchange, stimulate innovative thinking, and enhance the impact of research outcomes. By investigating the strategies and mechanisms employed by U.S. universities to encourage interdisciplinary collaboration, valuable guidance can be derived for cultivating a collaborative research culture in other academic settings.

The analysis of relevant research showed that the economic perspective of enhancing research efficiency and effectiveness in U.S. universities can be inferred. The allocation of funds for research and development (R&D) across different fields and the sources of funding shed light on the economic considerations associated with research activities. The key points regarding the economic perspective were based on the data drawn from [Valavanidis and Vlachogianni]. The researchers found that the expenditure on R&D in several universities in the USA, such as Johns

Hopkins University, University of Michigan, University of Wisconsin, University of Washington, University of California San Diego, University of California-San Francisco, Duke University, University of California-Los Angeles, Stanford University, and Columbia University in the city of New York was significant. The total R&D expenditure for these universities ranges from approximately $889 million to $2.1 billion. Life sciences, including biology and medicine, emerge as prominent fields receiving substantial R&D funding across multiple universities. Electrical engineering is another field that receives notable funding at some institutions. The allocation of funds to scientific fields, particularly life sciences, underscores the economic importance of advancements in these areas. The funding for R&D projects in U.S. universities comes from various sources. Federal government funding constitutes a significant portion of the financial support for research, with amounts ranging from around $1.1 billion to $1.8 billion. Other sources include state and local government funds, institution funds, business contributions, nonprofit organisations, and other donors. The diversification of funding sources reflects the collaborative and multidimensional nature of research financing. The percentage of R&D funding allocated to different fields varies across universities. Life sciences consistently receive a significant share, with some universities allocating over 50% of their total R&D expenditure to this field. Other fields, such as engineering, also receive substantial funding but may account for a smaller proportion compared to life sciences. These findings proved that, in terms of economic perspectives, the U.S. universities invested substantially in R&D and prioritised the fields such as life sciences and engineering. The funding sources and allocation strategies demonstrate the financial considerations that shape research activities within these institutions. Understanding the economic dynamics and trends in R&D funding can inform efforts to enhance research efficiency and effectiveness, ensuring the optimal utilisation of resources for impactful academic and economic outcomes.

Acquiring funding is a critical aspect of research efficiency and effectiveness. U.S. universities have implemented diverse funding mechanisms, including competitive grant programmes, industry partnerships, and philanthropic support, to stimulate innovation and sustain research endeavours [University-industry collaboration], [Harris & Gallo], [Nugent et al.]. Examining successful strategies employed by U.S. universities in attracting and managing research funding informs best practices for optimising resource allocation and maximising research outcomes in other institutions.

The relevant scientific literature highlights several legal considerations that impact research activities and outcomes. These legal perspectives encompass various aspects, including intellectual property rights, compliance with regulatory frameworks, contractual obligations, and ethical considerations. Scientific literature emphasises the importance of understanding and protecting intellectual property rights in research endeavours. Universities often have policies and procedures in place to safeguard the intellectual property generated by their researchers [Al-Maamari & Al-Ghuwairi]. This includes inventions, discoveries, copyrights, patents, and trademarks. Proper management of intellectual property ensures that researchers receive appropriate recognition and economic benefits while fostering innovation and collaboration. Compliance with regulatory frameworks, such as those related to human subjects research, animal experimentation, biosafety, and export controls, is crucial for research conducted in U.S. universities. Researchers must navigate these legal requirements to ensure ethical conduct, protect the welfare of participants, and maintain the integrity of their research findings. Adhering to legal and ethical guidelines promotes transparency, credibility, and responsible research practices. U.S. universities often engage in collaborative research projects with external entities, including other academic institutions, industry partners, and funding agencies [University-industry collaboration]. Legal agreements, such as research contracts, material transfer agreements, and confidentiality agreements, govern the terms and conditions of these collaborations.

Ethical considerations are intertwined with legal perspectives in research. Scientific literature emphasises the need for adherence to ethical principles, such as informed consent, privacy protection, and data confidentiality. Research involving human subjects, animals, or sensitive data requires compliance with ethical guidelines, institutional review boards (IRBs), and applicable laws.

Respecting ethical norms ensures the well-being of participants and promotes trust in the research enterprise.

Research infrastructure, including state-of-the-art laboratories, equipment, and research facilities, significantly contributes to research efficiency and effectiveness [Rosetta]. U.S. universities have made substantial investments in developing robust research infrastructure to support cutting-edge investigations [National Science and Technology Council]. By analysing the infrastructure models, maintenance strategies, and resource allocation practices of these universities, insights can be gained to guide the development and management of research infrastructure in other academic contexts.

Vocational training programmes for research administrators and institutional support play a vital role in facilitating efficient research operations [Smith, 2019]. U.S. universities have implemented training initiatives to equip research administrators with the necessary skills to navigate complex research environments [University of Arizona]. Investigating these initiatives can inform the development of similar programmes in other academic settings, enhancing research management and administration.

While research efficiency and effectiveness are crucial for universities in driving innovation and advancing society, there is a gap in the understanding of the best practices employed by leading U.S. universities in achieving these goals. Existing literature has provided insights into research efficiency and effectiveness, but a comprehensive examination of the specific strategies, approaches, initiatives, and training programmes implemented by U.S. universities is needed. Furthermore, there is a lack of studies focusing on the transferability of these best practices to higher educational institutions in different contexts, such as Ukraine.

Therefore, the *purpose* of this study is to explore and gain valuable insights into the best practices employed by U.S. universities in enhancing research efficiency and effectiveness. By examining the strategies, approaches, initiatives, and training programmes implemented by these institutions, the study aims to inform and guide academic institutions globally, particularly those in Ukraine, in optimising their research processes. The focus is on understanding the diverse and thriving research ecosystem of U.S. universities, which exemplify a strong commitment to research excellence and innovation. The research questions for this study were as follows:

1) What are the key strategies and approaches employed by leading U.S. universities to enhance research efficiency and effectiveness?

2) What are the best practices in disseminating knowledge and promoting research outputs employed by U.S. universities?

3) To what extent can the best practices identified in U.S. universities be transferable to higher educational institutions in Ukraine and other global contexts?

Research Methods. This study relied on a systematic review methodology [Torres-Carrión et al.]. The methodology utilised a strategy based on keywords and involved a structured search process, predetermined criteria for selecting and excluding sources, extraction of raw data, evaluation of chosen sources based on specific criteria, and synthesis of data using qualitative methods [Kraus et al.]. In this systematic review, a search strategy was employed to identify scholarly (peer-reviewed) studies conducted or programmes or guidelines implemented within the context of U.S. universities that examined approaches, initiatives, or practices aimed at enhancing research efficiency and effectiveness. The selected studies included both empirical research and literature reviews for further analysis. The search procedure involved utilising various well-regarded academic databases such as Scopus, Web of Science, and Google Scholar. Search scripts were used for each database in the study, as adapted from [Torres-Carrión et al.]. Moreover, a direct search on Google was conducted. The manual search involved reviewing relevant journals, conference proceedings, and citation lists of identified articles using specific keywords related to research efficiency and effectiveness, best practices, U.S. universities, innovation, collaboration, technology, funding, and interdisciplinary research. This comprehensive search strategy aimed to capture relevant literature for the study.

The study ensured the appropriateness and excellence of the chosen literature via the use of predeveloped criteria for inclusion and exclusion. The inclusion criteria were as follows: a) studies conducted in the context of U.S. universities not later than 20 years ago (the review would focus on

research conducted within the United States to specifically examine the best practices implemented in U.S. universities; b) research efficiency and effectiveness (the studies should explicitly address or discuss the enhancement of research efficiency and effectiveness in U.S. universities; this includes strategies, approaches, initiatives, or interventions aimed at improving various aspects of the research process); c) best practices (the studies should identify, describe, or evaluate best practices employed by U.S. universities to enhance research efficiency and effectiveness; these can include organisational strategies, funding mechanisms, collaborative models, technological innovations, interdisciplinary approaches, or any other practices that have demonstrated positive outcomes; d) empirical studies and literature reviews (the review would consider empirical studies (quantitative, qualitative, or mixed methods) and literature reviews that provide evidence-based insights into the best practices of U.S. universities in enhancing research efficiency and effectiveness); e) the transferability score is higher than 40.

The exclusion criteria were as follows: a) studies conducted outside the context of U.S. universities (studies conducted in countries other than the United States will be excluded, as the focus is specifically on best practices in U.S. universities); b) studies not related to research efficiency and effectiveness (studies that do not directly address or discuss the enhancement of research efficiency and effectiveness in U.S. universities will be excluded); c) irrelevant topics or disciplines (studies that focus on topics or disciplines unrelated to research efficiency and effectiveness, such as teaching methods, student performance, or administrative processes not directly linked to research); d) opinion pieces and editorials (opinion pieces, editorials, commentaries, and non-peer-reviewed publications).

The screening and selection phase took place between February 2024 and the end of May 2024. The author received generous support from three colleagues who assisted in the search, screening, and selection of relevant sources. In the beginning, the selection procedure consisted of four distinct stages: identification, screening, evaluation of source eligibility, and inclusion [McKenzie et al.]. The search results were evaluated based on the title and abstract to assess their potential relevance. The reviewers used the Checklist for Preliminary Examination of Studies (see Appendix A). The chosen articles then underwent a comprehensive review of the full text to determine their suitability for inclusion in the literature review. The final selection was based on how well the articles aligned with the research objectives and their substantial contribution to the research efficiency and effectiveness in U.S. universities.

The chosen articles were analysed to extract and structure pertinent data related to recognized themes, domains, or facets of research efficiency and effectiveness. Essential information, including author(s) and publication year, depiction of strategies/approaches/initiatives/training programmes that enhance research efficiency and effectiveness within university research, and the potential transferability of best practices observed in U.S. universities to Ukrainian higher education institutions, were carefully examined. A qualitative analysis approach was utilised to identify patterns, similarities, and unique contributions within the selected literature. The extracted data were then synthesised and interpreted to present a comprehensive overview of the best practices employed by U.S. universities in enhancing research efficiency and effectiveness. Following that, three experts were involved to assess the *adaptation potential* (*transferability*) of the strategy/approach/initiative/training programme by evaluating various factors using the researcher-designed checklist (see Appendix B). Each factor includes specific assessment criteria, and a 5-point Likert scale is provided for rating the degree of alignment or suitability. Experts used this tool to systematically evaluate the transferability of the strategy/approach/initiative/training programme to higher educational institutions in Ukraine and identify potential modifications or adjustments needed to ensure its relevance and effectiveness within the local context (see the descriptors of transferability levels in Appendix C).

Results. The study identified 20 publications that highlight strategies, approaches, initiatives, best practices or training programmes to enhance research efficiency and effectiveness in university settings. Selected studies are presented below. These articles encompass a range of domains within university research, including interdisciplinary collaboration, research funding and legal con-

siderations, knowledge management, innovation, raising funds, and the training of research administrators and managers. The experts recognised these insights as transferable to higher educational institutions in Ukraine. The findings can be analysed according to the transferability levels assigned to the strategies, approaches, initiatives, and training programs for enhancing research efficiency and effectiveness in U.S. universities. The transferability levels, ranging from Level 1 to Level 3, indicate the potential applicability of these practices in higher educational institutions in Ukraine.

Level 1 Transferability

The integrated approach that embraces interdisciplinarity and knowledge integration, as proposed by Clark and Wallace [Clark & Wallace] holds the highest transferability level (Level 1). This approach offers a practical meta-framework for interdisciplinary inquiry, emphasising the importance of integrating education and fostering collaboration to advance well-being for all.

The sustainability pathway model proposed by Sarpong and colleagues [Sarpong et al.], which emphasises the interplay of investment, talent, and learning institutions in driving sustainable growth and innovation, also falls under Level 1 transferability. This model highlights the need to align R&D investments with talent development and collaborative learning to establish an economically viable innovation system.

Level 2 Transferability

The study by Foltz and colleagues [Foltz et al.], examining the factors influencing research efficiency and technological progress in U.S. research universities, holds a Level 2 transferability. Their findings provide insights into the impact of changes in funding sources on research performance and can inform strategies to improve research productivity.

The investigation of the collaboration between the federal government and academic research institutions by Harris and Gallo [Harris & Gallo] is also classified under Level 2 transferability. This study highlights the importance of federal regulations and requirements while acknowledging concerns raised by academic institutions regarding their unintended effects on research productivity.

The examination of knowledge management best practices at Yale University, as presented by Massicotte and Oas [Massicotte & Oas], falls under Level 2 transferability. Their Process Framework and Service Knowledge Management System offer insights into effectively supporting research endeavours through high-quality knowledge management processes.

The exploration of knowledge management tools and techniques, focusing on their contribution to research efficiency and effectiveness in U.S. universities, also holds a Level 2 transferability. The highlighted tools and their capabilities for knowledge creation, visualisation, and retrieval offer potential benefits for improving research processes and outcomes [Xu et al.].

The study investigating the impact of university-industry collaboration funding schemes on the generation of commercially valuable research outputs is categorised as Level 2 transferability [Nugent et al.]. Their findings shed light on the dynamics between collaboration schemes and research outcomes, offering insights into strategies for enhancing research efficiency and effectiveness.

The exploration of efficiency factors and outcomes at the system, sector, and institutional levels in U.S. universities, as examined by Kupriyanova and colleagues, falls under Level 2 transferability. Their comprehensive framework, along with identified facilitators and barriers, provides guidance for institutions aiming to improve research efficiency [Kupriyanova et al.].

Tollestrup's study explores the funding process for U.S. federal government programmes, where Congress evaluates bills annually to establish or modify these programs, leading to various funding methods affecting decision timelines and predictability. The report elucidates these approaches, exemplifying how funding relies on the type of law in place: some laws create or modify programs (authorisations), while others allocate funds (appropriations) [Tollestrup]. Understanding these law types and funding sources is pivotal for enhancing research efficiency and management in U.S. universities. This was assigned transferability level 2 by the experts.

Level 3 Transferability

The proposal of a dynamic capabilities framework for managing innovation ecosystems in universities [Heaton et al.] falls under Level 3 transferability. This framework guides universities in adapting to evolving challenges and highlights their transformative role in driving success in innovation ecosystems.

The exploration of the "Triple Helix" model and its impact on university-industry-government interactions, innovation, and knowledge creation [Etzkowitz] is classified as Level 3 transferability. This model highlights the importance of collaborative relationships and the proactive role of universities in utilising knowledge and expanding academic knowledge creation.

The analysis of the Duke Project Management Community of Practice as a best practice in research efficiency and effectiveness at Duke University [Johnson et al.] holds a Level 3 transferability. This practice has demonstrated its impact in providing project management expertise and mentorship, serving as a valuable resource across campus.

The recognition of the importance of valuing and supporting research administrators through increased awareness, more degree programs, and ongoing education [Smith] falls under Level 3 transferability. This acknowledgment highlights the role of educated administrators in securing funding and assisting researchers, ultimately enhancing research efficiency and effectiveness.

The findings from the study conducted by [Thomas et al.] underscore the important role of university spin-offs in harnessing the value of scientific progress. The study delves into the initial phases of 30 ventures co-founded by a distinguished scientist-entrepreneur over a span of four decades. It reveals how a star-scientist-entrepreneur identifies, shapes, and seizes opportunities to empower university spin-offs prior to their formal inception. Aligned with the innovation domain of university research, this study achieved a transferability level of 3 based on expert evaluations.

Collectively, the findings suggest that adopting and adapting these best practices and approaches can significantly contribute to enhancing research efficiency and effectiveness in higher educational institutions in Ukraine. Policymakers, administrators, and researchers can draw upon these insights to develop tailored strategies and initiatives that align with their institutional goals and priorities. By implementing these practices, institutions can foster interdisciplinary collaboration, improve research funding mechanisms, enhance knowledge management, promote innovation, and cultivate a skilled research administration workforce, thereby driving research excellence and impact in Ukraine.

Conclusion. Overall, the findings indicate that a combination of interdisciplinary collaboration, effective research funding mechanisms, knowledge management practices, collaborative university-industry-government networks, and training programs for research administrators can significantly enhance research efficiency and effectiveness. Implementing these best practices in higher educational institutions in Ukraine has the potential to drive research excellence, foster innovation, and contribute to sustainable development. However, it is essential to consider the specific cultural, contextual, and institutional factors in Ukraine when adapting these practices to ensure their successful implementation and positive impact on research outcomes. **Future research** can delve into the challenges and barriers faced during the implementation of the identified strategies, approaches, initiatives, and training programs. Understanding the factors that hinder successful implementation can inform the development of effective strategies to overcome these challenges and ensure the transferability of best practices in diverse settings.

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APPENDICES

Appendix A: Checklist for Preliminary Examination of Studies

Year_____

No. of the paper _____

Question	Yes	No
1. Was the study conducted within the past 20 years?		
2. Is the study explicitly conducted within the United States?		
3. Does the study mention or focus on U.S. universities?		
4. Does the study address or discuss the enhancement of research efficiency and effectiveness?		
5. Is there a clear emphasis on improving various aspects of the research process?		
6. Does the study identify, describe, or evaluate best practices employed by U.S. universities?		
7. Are organisational strategies, funding mechanisms, collaborative models, technological innovations, or interdisciplinary approaches discussed?		
8. Is the study based on empirical research (quantitative, qualitative, or mixed methods)?		
9. Is the study a literature review that provides evidence-based insights?		

Note: The study is included for detailed reading if the source scores at least 6 "yes" answers.

□ *Include for the Detailed Reading* □ *Exclude*

Appendix B: Checklist for Assessing Adaptation Potential of a Strategy/Approach/Initiative/Training Programme for Enhancing Research Efficiency and Effectiveness in Higher Educational Institutions in Ukraine: Insights from U.S. Universities

Adaptation Factors	Assessment Criteria	5-point Likert Scale				
		1	2	3	4	5
Cultural and Contextual Factors	*1. Degree of alignment with local cultural norms and values					
	*2. Consideration of educational traditions and practices					
	*3. Awareness of administrative practices in Ukrainian institutions					
Institutional Capacity	**1. Availability of necessary resources and infrastructure					
	**2. Alignment with existing expertise and capabilities					
	**3. Feasibility within available institutional resources					
Legal and Regulatory Environment	***1. Compliance with local higher education regulations					
	***2. Understanding of legal obligations in Ukraine					
	***3. Consideration of intellectual property rights and ethical considerations					
Stakeholder Engagement	****1. Inclusion of stakeholder perspectives in decision-making process					
	****2. Feedback from university administrators and faculty members					
	****3. Incorporation of student and researcher input					
Pedagogical and Methodological Considerations	*1. Alignment with local teaching and learning methods and practices					
	*2. Suitability for instructional practices and preferences in Ukraine					
	*3. Adaptability to assessment methods used in Ukrainian institutions					
Relevance to National Priorities	*1. Alignment with national higher education and research strategies					
	*2. Addressing specific needs and goals of the country					
	*3. Contribution to national research priorities and initiatives					

*Note: Meanings assigned to values: *1 – Not aligned at all; 2 – Slightly aligned; 3 – Moderately (Partially) aligned; 4 – Aligned to a great extent; 5 – Fully aligned.*

***1 – Inadequate; 2 – Insufficient; 3 – Moderately sufficient; 4 – Highly sufficient; 5 – Fully adequate.*

****1 – Not compliant at all; 2 – Partially compliant; 3 – Mostly compliant; 4 – Largely compliant; 5 – Fully compliant.*

*****1 – Minimal involvement; 2 – Limited involvement; 3 – Moderate involvement; 4 – Extensive involvement; 5 – Full involvement.*

Appendix C. (Accompanies the checklist in Appendix B). Descriptions of levels of transferability a Strategy/Approach/Initiative/Training Programme for Enhancing Research Efficiency and Effectiveness in Higher Educational Institutions in Ukraine

Level 1 Transferability (Scored 40-59):

The strategy/approach/initiative/training programme exhibits a moderate level of transferability, as it considers cultural and contextual factors that can be adapted to align with local norms and values in Ukrainian higher educational institutions. The strategy/approach/initiative/training programme also take into account institutional capacity by considering the availability of necessary resources and alignment with existing expertise. Additionally, the strategy/approach/initiative/training programme acknowledges pedagogical and methodological considerations by evaluating the alignment with local teaching and learning methods and adaptability to assessment methods used in Ukrainian institutions.

Level 2 Transferability (Scored 60-79):

The strategy/approach/initiative/training programme demonstrates a high level of transferability, as it incorporates legal and regulatory factors specific to the Ukrainian higher education system. It demonstrates the compliance with local higher education regulations, understanding of legal obligations, and consideration of intellectual property rights and ethical considerations. Furthermore, stakeholder engagement is considered by including perspectives from university administrators, faculty members, students, and researchers, ensuring a comprehensive decision-making process.

Level 3 Transferability (Scored 80-90):

The strategy/approach/initiative/training programme is designed with a significant level of transferability, as it addresses the relevance to national priorities in higher education and research strategies in

Ukraine. It shows the alignment with national goals, contribution to national research priorities and initiatives, and consideration of specific needs of the country. The strategy/approach/initiative/training programme also takes into account the importance of stakeholder involvement, with extensive feedback incorporated from various university stakeholders, including administrators, faculty, students, and researchers. This comprehensive approach enhances the transferability of the strategy/approach/initiative/training programme to enhance research efficiency and effectiveness in Ukrainian higher educational institutions.

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ПІДВИЩЕННЯ ЕФЕКТИВНОСТІ ТА РЕЗУЛЬТАТИВНОСТІ НАУКОВИХ ДОСЛІДЖЕНЬ: ОГЛЯД КРАЩОГО ДОСВІДУ УНІВЕРСИТЕТІВ США

Метою дослідження є вивчення найкращих практик, що застосовуються американськими університетами для підвищення ефективності та результативності досліджень, та з'ясування їх адаптаційного потенціалу для закладів вищої освіти України. Обрано методологію систематичного огляду, що включає структурований процес пошуку джерел на основі ключових слів. Для відбору літератури було розроблено критерії. Для синтезу даних були використані якісні методи. Отримані результати висвітлюють ключові фактори, що сприяють ефективності та результативності наукової роботи в університетах США. З'ясовано, що міждисциплінарна колаборація є вирішальним елементом, а діяльність, що сприяє інтеграції знань і взаємодії між різними зацікавленими сторонами, демонструє значний потенціал для адаптації в університетському середовищі. Фінансування досліджень та правові аспекти визначено важливими чинниками впливу на ефективність дослідницької діяльності. Розуміння впливу змін у джерелах фінансування, дотримання федеральних норм та забезпечення прозорості у використанні коштів є вирішальними для посилення результативності наукових досліджень. Стратегії, пов'язані з фінансуванням досліджень і правовими аспектами, продемонстрували помірний потенціал для адаптації. Інструменти управління знаннями та їх використання для створення, візуалізації та пошуку знань визнано корисним для дослідницьких процесів і результатів, оскільки вони допомагають виробленню ефективних стратегій управління знаннями у закладах вищої освіти. Ці практики продемонстрували помірний рівень адаптації в університетський контекст. Співпрацю між університетами, промисловістю та державними установами відзначено критично важливою умовою для стимулювання інновацій та створення знань. Стратегії, що сприяють взаємодії між університетами, промисловістю та урядом, заохочують підприємництво та підтримують інноваційні екосистеми, продемонстрували високий рівень потенціалу для адаптації. Роль адміністраторів наукових досліджень у підтримці дослідників та управлінні дослідницькими проєктами була визнана вирішальною. Проведення професійних тренінгів, підвищення обізнаності та надання можливостей безперервного навчання для адміністраторів наукових досліджень визначено як стратегії з високим потенціалом для адаптації, оскільки вони сприяють ефективності результатів університетських досліджень.

Ключові слова: ефективність досліджень, результативність досліджень, університети США, інновації, співпраця, технології, фінансування, міждисциплінарні дослідження.