

# The Management Analysis of Research and Publication System of Postgraduate School of Unimed oriented towards community needs

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**Abstract.** The postgraduate school of Universitas Negeri Medan (PPs Unimed) as the manager of academic activities for the master's and doctoral programs has enormous potential to produce research and scientific publications that are able to compete at the national and international levels. This is very reasonable because since 2016, PPs Unimed has implemented one of the study graduation requirements is to have scientific publications in Sinta-2 accredited national journals or international journals (for Masters students) and scientific publications in reputable international journal (for doctoral students). The output of student research in the form of scientific publications is deemed necessary to be aligned with the needs of society, business and industry so that it is more usable. Therefore, PPs Unimed needs to carry out several studies through research to develop governance for research and scientific publications. This research aims to (1) produce a research and scientific publication governance system in the Unimed Postgraduate Program (PPs). (2) to develop a policy structure for the PPs Unimed to produce research and scientific publications that are oriented to the needs of society and industry and (3) to increase the number of research and scientific publications that are oriented to the needs of society and industry. The object of the research that will be carried out is in the form of theses and dissertations on the results of research by PPs Unimed students that have been done previously. While the research subjects are students, lecturers and partners from business/industry circles that are relevant to the Study Program in the PPs Unimed environment. Data analysis will be carried out to obtain several research governance policies at PPs Unimed so that they can be oriented towards the world of business and industry.

**Keywords:** Management; Research and Publication system; Postgraduate School of Unimed.

## 1 Introduction

Postgraduate is a level of higher education that plays an important role in producing research and scientific publications that are able to meet the needs of society and industry. Currently, the demand to produce research that is relevant and can be applied practically is increasing [1]. Therefore, it is necessary to develop a research and scientific publication governance system that can accommodate this need. Increasing orientation to the needs of society and industry in postgraduate scientific research and publications is nothing new. However, global environmental changes and technological developments have provided additional impetus to encourage the development of governance systems that are more adaptive and responsive to these changing needs [2-3]. In the era of digital and globalization, postgraduates must be able to utilize information technology, collaborate across disciplines, and establish partnerships with industry and other related parties to produce research and scientific publications that are relevant and useful [4-5].

To date, the Unimed Postgraduate Program manages 25 study programs including 19 (nineteen) Masters Study Programs and 6 (Six) Doctoral Programs. The credibility and credibility of the Unimed Postgraduate can be seen from the recognition of external parties for performance and achievement achievements, including: (1) of the 25 study programs held by the Unimed Postgraduate, there are 8 (eight) category A accredited study programs, 2 (two) are accredited with Superior, 1 (one) ) accredited Very Good, 10 (ten) study programs accredited B, 1 (one) study program accredited Good, and 4 (four) new study programs; (2) the number of study programs increased by almost 100%, from 13 study programs until 2015 to 25 study programs in 2021, (3) the number of national journals accredited by Sinta increased by 100%, from 0 in 2015 to 13 journals in 2021, (4 ) the number of proceedings indexed with the reputation of Scopus and Web of Science (WoS) increased 100%, from 0 to 2 proceedings in 2020 (AISTEEL International Conference Proceedings and ICOSTA International Conference Proceedings), (5) student and lecturer research and publications published in accredited national journals, reputable international proceedings, in reputable international journals increased 100%, from 0 manuscripts in 2015, to 1212 manuscripts in 2021, (6) the number of joint research lecturers at PPs Unimed with foreign educational institutions increased 100%, from 0 pieces in 2016 to 6 joint research pieces in 2022.

The eligibility and credibility of Unimed PPs which excels in the research and scientific publication process can be interpreted from the management of the master's and doctoral programs where every student is required to produce new scientific studies (novelty) through research. Each study program has a roadmap and research umbrella that is relevant to research needs (follow research function) in the world of education, business and industry (DUDI). The downstream research carried out so far still focuses on scientific publications in international journals or proceedings indexed by reputable international indexers. Research and publication excellence is realized through the availability of 102 (one hundred and two) professors and 264 doctors who match the study program's expertise as educational staff. Another form of support is the availability of learning facilities such as the Digital Library as a facility for accessing various journal sources, various types of laboratories, implementation of 6 (six) types of assignments (TR, CBR, CJR, Idea Engineering, Mini Research, and TP).

The Unimed study program and PPs research road map and umbrella are designed to achieve sustainability with the research needs (follow research function) in the world of education, DUDI, the job market and the demands of society 5.0 in the era of industrial revolution 4.0. The Unimed PPs academic community carries out various types and variations of research in accordance with socio-cultural behavior problems, social/global educational values and challenges, developing a 21st century competency-based curriculum, developing economic and business management models according to the demands of DUDI, developing innovative learning models, effective school models, analysis of various educational policies, integrated research on learning technology and educational management, use of physics, chemistry and biology laboratories to produce various industrial scale products, digital economic challenges, and the development of artificial intelligence in big data analysis which gives birth to new values in social cultural context. Educational research policies based on real needs in schools are carried out to enrich educational teaching materials in the form of innovations in learning. The results and research products of students and lecturers are published in accredited national journals and reputable international journals, and are used in the development of education and DUDI programs and policies at both national and international levels.

This research will examine various aspects in developing a postgraduate scientific research and publication governance system that is oriented towards the needs of society and industry. This article will analyze key concepts in integrating the needs of external stakeholders into the research and scientific publication process, and explore various strategies and best practices that postgraduate institutions can use to achieve this goal.

## **2 Method**

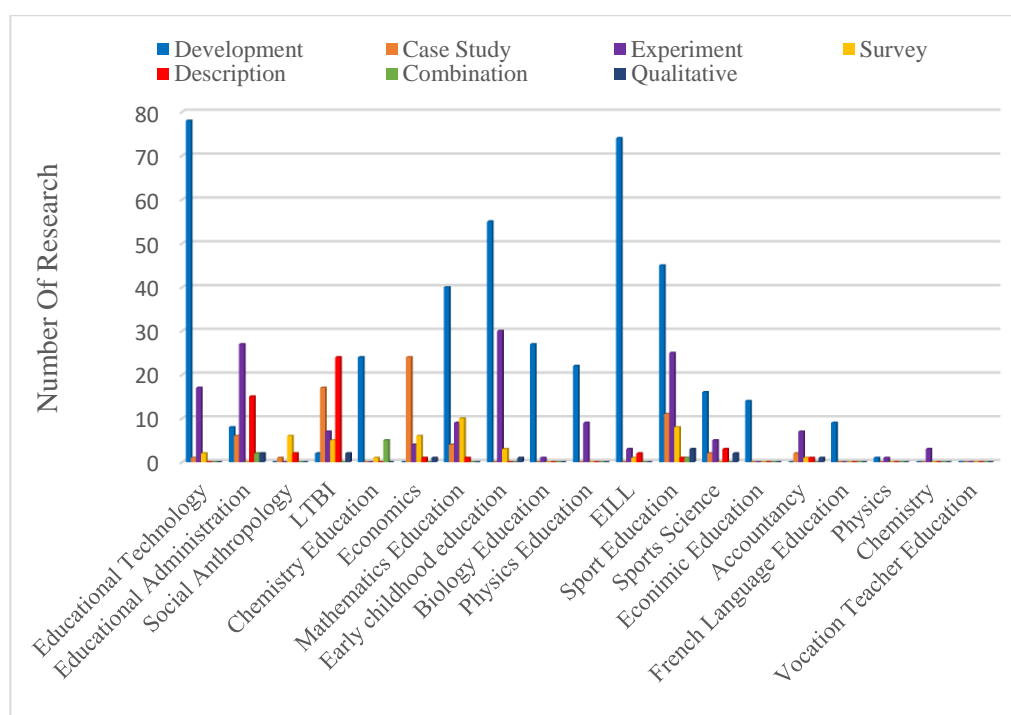
This research adheres to the Plomp (1997) development model which consists of several phases, namely the initial investigation phase, design, realization/construction, test-evaluation-revision phase and implementation phase. The initial investigation phase was carried out by classifying the number and type of postgraduate student research based on master's and doctoral study programs. The next phase is the design of the policy and governance model for theses and dissertation research for master's and doctoral students at Medan State University. The supporting elements of this policy model were tested and evaluated through interviews and collecting responses from students and teaching staff at Unimed Postgraduate. The final phase is implementing it for certain student groups on a limited scale. The data collected from this research is the number and type of thesis and dissertation research of Unimed Postgraduate students. The types of research based on the methods that are the object of this research are development research, experimental, survey, descriptive, combination, qualitative and case study form.

## **3 Result and Discussion**

### **3.1 Distribution of Research Types of Unimed Graduate Students**

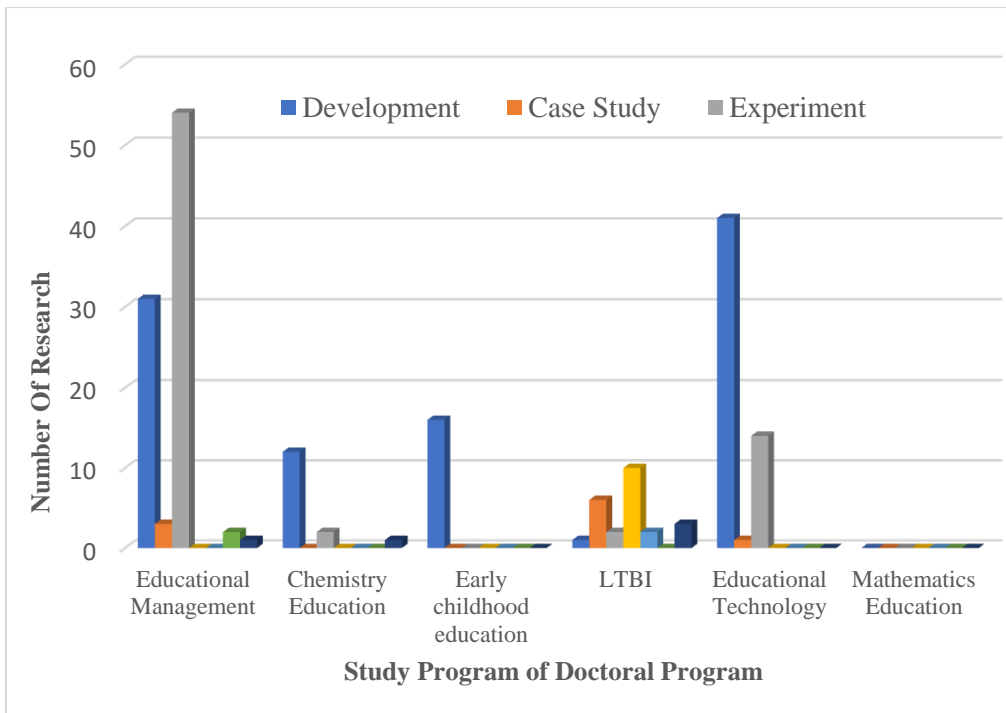
Unimed's postgraduate research roadmap shows that there are seven types of thesis and dissertation research as part of students' final assignments, namely development research, case studies, experiments, surveys, descriptions, combinations and qualitative research types. After

observing each study program, the distribution of research types for master's students was obtained as shown in Figure 1. In Figure 1, it can be seen that as many as 19 master's study programs, both educational and non-educational programs, have been managed by the Unimed Postgraduate Program. Among the nineteen, it is known that the Master of Education Technology study program has produced the highest number of research studies in the last four years, namely 98 works, followed by the Sports Education study program with 94 works and Basic Education with 89 works. The type of research that is the most favorite for students is development research, where this type almost dominates student work in every study program. As is known, this type of development research is the main reference for research, especially in the field of education, because it is oriented towards new products or methods [5-6].

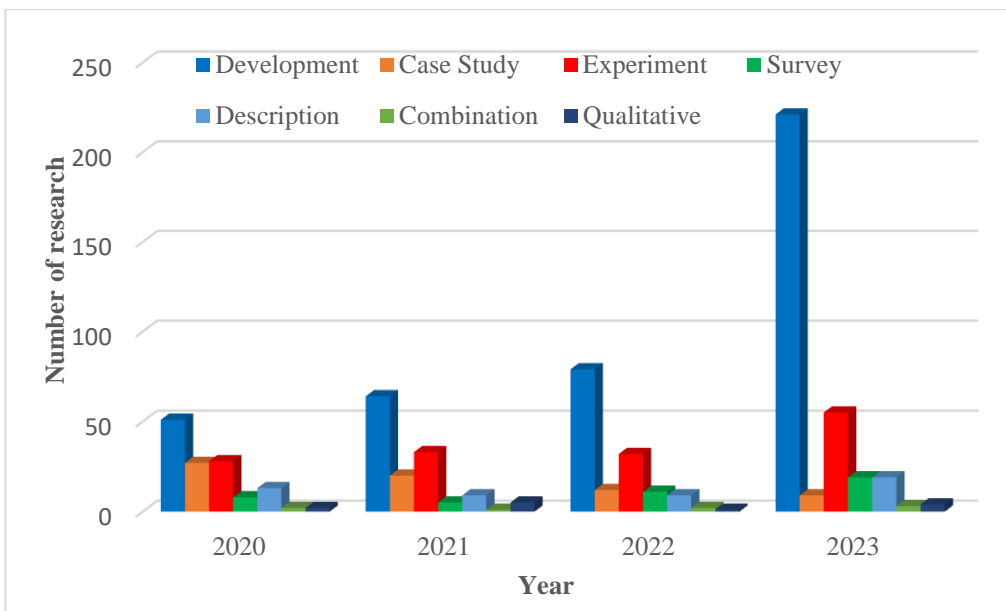


**Figure 1.** Distribution of Research types for Master's Student of Graduate School of Unimed

The distribution of research types for Unimed Postgraduate doctoral (S3) students is shown in Figure 2. A total of six doctoral study programs are managed by Postgraduate, namely the doctoral study program in Education Management, Educational Technology, Chemistry Education, English Applied Linguistics (LTBI), Basic Education and Mathematics Education . This type of experimental research is the most dissertation work produced by the Education Management study program, followed by the type of development research (R & D). Meanwhile, in the Educational Technology study program, it is known that development research dominates students' final work. This type of experimental research is also very popular with doctoral students due to the completeness of the research method of trying, searching for and proving phenomena or grand theories previously revealed [7-8].



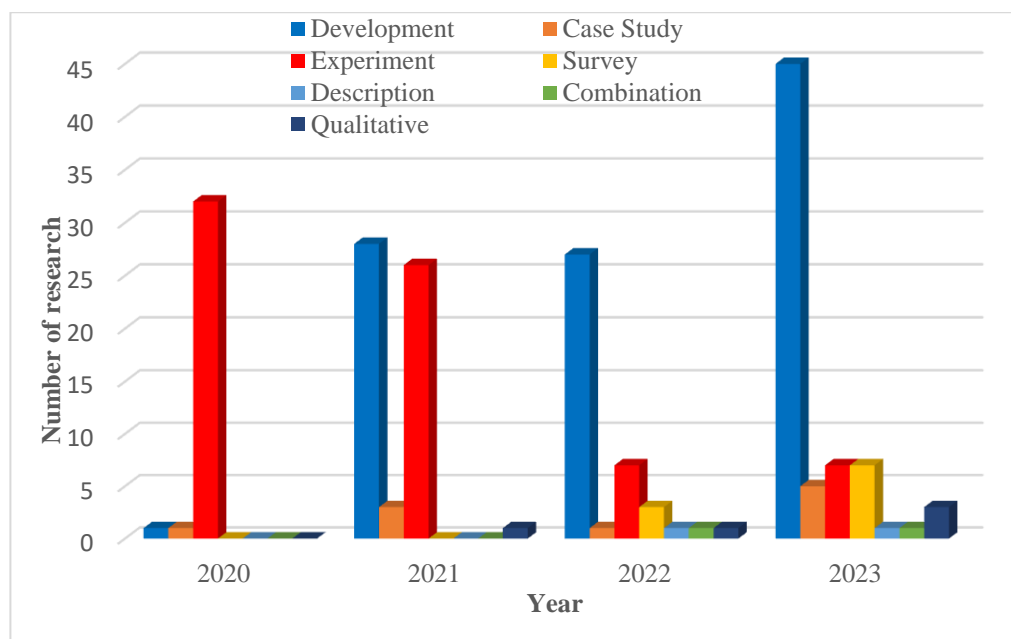
**Figure 2.** Distribution of Research type for Doctoral Student of Graduate School of Unimed



**Figure 3.** Distribution of research types of Unimed master's student for 2020 to 2023

Figure 3 shows the number of research works by Unimed Postgraduate master's students based on research type for 2020 to 2023. In terms of quantity, the number of student research works from 2020 to 2023 has increased. This type of development research (R & D) is the type of research that is mostly adopted for student theses in accordance with the research roadmap for each study program. In fact, in 2023 the number of research and publications by master's students for the development type will reach 221 works, while the combination research type will be 3 works and will be the smallest number compared to other types of research. This type of development research (R&D) is a favorite for students because apart from being a study program research roadmap, it can also develop the researcher's personal and future potential [9-10].

The number of research studies by Unimed postgraduate doctoral program students from 2000 to 2023, distributed across seven types of research, can be seen in Figure 4. In 2000, it was discovered that the distribution of dissertation research still focused on the experimental type of research, while the type of development research was very minimal. However, in 2021 a rule has been made that doctoral student research must produce a draft product that can have an impact on society. This can increase the amount of research with this type of development. The peak of this policy will be seen in 2023, when 65.2% of doctoral program research will be of the development (R&D) type.



**Figure 4.** Distribution of research types of Unimed Doctoral student for 2020 to 2023

### 3.2. Postgraduate Research and Publication Policy

Research and scientific publication policies at postgraduate level have a crucial role in forming an environment that supports the development of a governance system that is oriented

towards the needs of society and industry. To achieve this goal, a number of policy factors must be taken into account.

1. **Increasing Open Access:** Policies that encourage open access to scientific publications are very important. By facilitating public access to research results, postgraduate institutions can ensure that their research is more accessible to society and industry, enabling broader utilization of knowledge. Policies such as those implemented in the European Union's Horizon 2020 program have provided strong guidance in this regard.
2. **Research policies and scientific publications at postgraduate level** have a crucial role in forming an environment that supports the development of a governance system that is oriented towards the needs of society and industry. To achieve this goal, a number of policy factors must be taken into account.
3. **Industry Needs-Based Curriculum Development:** Postgraduate institutions may adopt policies requiring them to consider input from industry in curriculum development. By involving industry in the curriculum planning process, postgraduates can ensure that their graduates have the skills and knowledge relevant to the demands of the job market.
4. **Encourage Applied Research:** Policies should provide incentives for research that has a direct impact on industry or society. This may include the allocation of additional funding or special recognition for research that successfully produces innovations that benefit the public or industry.
5. **Impact-Based Performance Evaluation:** The performance evaluation system at the postgraduate level needs to combine social and economic impact indicators as one of the assessment criteria. This will encourage lecturers and researchers to focus on research that has practical value and relevance to the needs of society and industry.
6. **Industry-Related Research Training:** Policies that support research training programs that focus on industrial applications need to be promoted. This could include incentives for students to undertake research based on industry projects or undertake internships at companies.

In developing a research and scientific publication governance system that is oriented towards the needs of society and industry, holistic and adaptive policies are very important. By involving all relevant stakeholders, including government, higher education institutions, and industry, we can create an environment that supports useful research and innovation that has a positive impact. Thus, policy acts as the main foundation in ensuring postgraduates fulfill their role as supporters of the sustainable development of society and industry.

### **3.3 Elements of Postgraduate Level Research and Publication Governance**

Building a postgraduate student research and publication governance system that is effective and oriented towards the needs of society and industry requires attention to a number of important elements. Following are these elements:

1. **Clear Vision and Mission:** Postgraduate institutions need to have a clear vision and mission regarding their students' research and scientific publications. This vision must

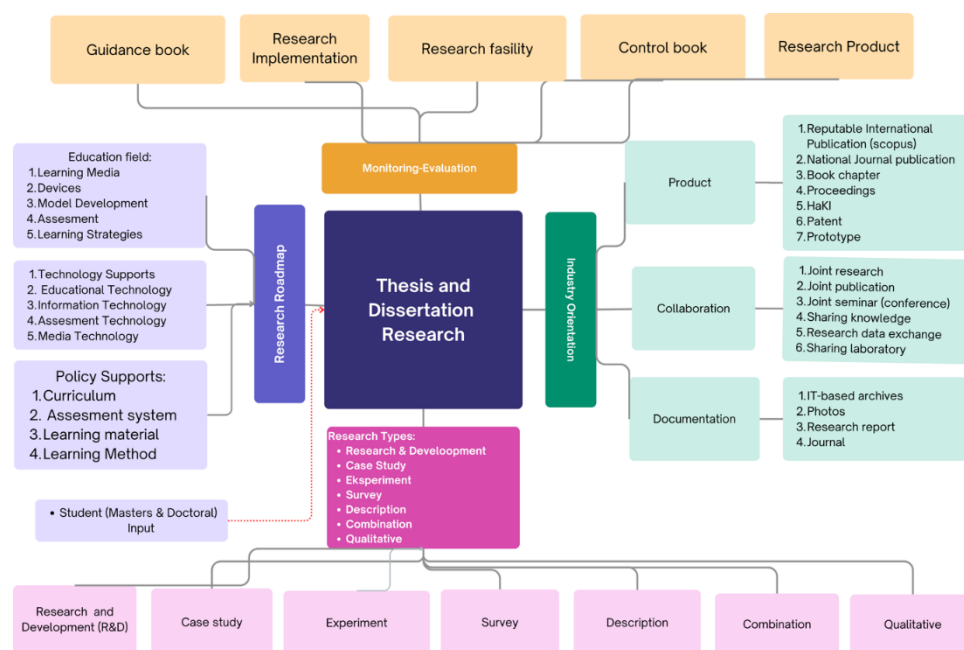
reflect a commitment to developing research that is relevant and has a positive impact on society and industry.

2. **Policies and Guidelines:** Institutions must develop policies and guidelines that support scientific research and publications that are oriented towards the needs of society and industry. This includes policies related to open access, research ethics, collaboration with industry, and development of relevant curricula.
3. **Resource Support:** It is important to provide sufficient resource support for graduate students, including access to libraries, laboratories, information technology, and research funds. Institutions also need to provide training and guidance support to students.
4. **Collaboration with Industry:** Facilitating collaboration between graduate students and industry is key in ensuring research relevance. This may include formal partnerships with companies, joint research projects, or internship opportunities.
5. **Performance Evaluation:** Institutions need to have a fair and transparent performance evaluation system for graduate students. Assessments should cover aspects such as research quality, social and economic impact, and contribution to societal and industrial needs.
6. **Open Access and Scientific Dissemination:** Ensuring that student research results can be openly accessed by society and industry is important. Institutions need to support open publication practices and provide related training.
7. **Skills Development:** Apart from academic knowledge, graduate students need to be developed in terms of skills such as communication, teamwork, problem solving, and industry understanding. Relevant training programs should be offered.
8. **Commitment to Research Ethics:** Institutions should promote high levels of research ethics among their graduate students. This includes an emphasis on integrity, transparency, and social responsibility in research.
9. **Measuring Social and Economic Impact:** Institutions need to develop metrics and mechanisms to measure the social and economic impact of graduate student research. This helps in ensuring that research is truly beneficial to society and industry.
10. **Student Participation in Decision Making:** Postgraduate students should be involved in the decision-making process related to research and publication governance. They can provide valuable insight and a perspective closer to their experiences.
11. **Network Development:** Facilitating student networks with professionals and stakeholders in industry and society can help in expanding opportunities for collaboration and job placement after graduation.
12. **Evaluation and Continuous Improvement:** The governance system should be assessed periodically, and changes should be made based on the evaluation results. Continuous improvement is key in maintaining system relevance.

The model and important elements for realizing postgraduate student research and publications that are oriented towards the needs of society and industry can be seen in Figure 5. There are four main elements in carrying out thesis and dissertation research, including (1) development of a research roadmap, (2) collaboration with the world of business and industry (3) grouping by type of research and (4) implementation of monitoring and evaluation. Each



of these elements contains sub-elements which aim to capture small issues within the scope of each supporting thesis and dissertation research [11-12]. Policies regarding research and publications by master's and doctoral students need to be regulated to increase the productivity and impact of research on society and the industrial world [13]



**Figure 5.** The policy model of research and publication in postgraduate school of Unimed with industry oriented

## 4 Conclusion

Types of thesis and dissertation research that are oriented towards community needs consist of developmental, experimental, survey, descriptive, combination, qualitative and case study types. These seven types of research have been specified in the Unimed postgraduate thesis and dissertation research roadmap and guidebook. Apart from being oriented towards the needs of society, thesis and dissertation research is also expected to be able to produce products and be used by the business and industrial world. To realize the usability of thesis and dissertation research products in society and the industrial world, a research policy model for master's and doctoral students has been designed. This model anchors its pillars in four elements including (1) development of a research roadmap, (2) collaboration with the business and industrial world (3) grouping by type of research and (4) implementation of monitoring and evaluation.

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