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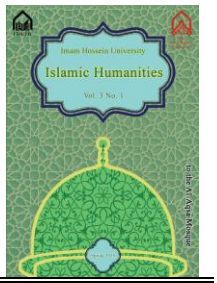

RPG14 Idea: A Tool to Increase the Glare (of problem) in Academic Research Titles

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ABSTRACT

Main Objective: This paper designs and presents an innovative tool [Real Problem Glare (RPG14)] that will actually determine the degree of glare and non-imaginariness of research titles. In other words, it is an operational model that criticizes the realness of research titles and then does the necessary essence-related and wording corrections to enhance the originality of research titles. Methodology: The present study used a mixed methodology. First, participatory action research was used to identify and understand the real challenges and needs in university-industry communications. At this stage, necessary data and information were collected in collaboration with representatives of universities and industries. Then, using grounded theory, data collected from in-depth interviews with 14 experts from academic, industrial, and government fields were analyzed. This analysis led to the identification and elimination of ambiguity, unreal, and unnecessariness of the research title in order to ensure that the problem is as real and tangible as possible, not imaginary, and to be considered as an accurate "point of departure" for the research. Findings: The results show that the designed tool (RPG14) increases the necessity of clarifying the causal-contextual conditions and intervening factors as well as strategies and the need for precise synergy between the aforementioned items, and ultimately will significantly prevent the obvious waste of resources, especially financial resources, time, trust, expectations, and credits related to research; and replace them with positive achievements and outcomes. Results: According to the approval of 14 experts, RPG14 (Real Problem Glare) will help research to be completely problem-oriented (away from subjectivity) with their achievement being nothing but a solved problem.

In this way, the relationship between the university, industry and government will become more significant based on increased trust, and knowledge-based problem solving will become more central and acceptable than before.

1. Introduction

The diagnosis of diseases and disorders in humans is the responsibility of medical science and is defined in the medical profession; the responsibility of a manager in an organization is also as finding the symptoms of deficiencies in the organization and prescribe to fix them. The main concern of the present paper is that a large number of scientific papers and research are carried out in universities with their limited capacity and the countless needs of the university, the government and the people, which ultimately does not lead to solving any of the problems. It was found that the main reason for this unfortunate incident lies in the lack of precise definition of research titles (Menzel, 1964) and the lack of verification of the realness of the titles (Phillips, 2019) and their imaginary nature (Kara, 2013).

After more than four decades of doing academic staff and achieving the highest academic degrees, and holding a multitude of science and technology positions in the country, the authors of this paper have clearly found that defining research in an environment far from the realities of industry, government, and the public results in multiple wastes: waste of researchers' time, waste of university knowledge, waste of industry, public, and government trust in the university, waste of capital, and waste of credibility (Hoban, 1956).

Defining research titles in a vacuum and without any connection to real issues leads to the creation of research that is far from the needs of society and industry and ultimately lacks practical application (Pasian, 2016). This approach not only wastes financial and time resources, but also wastes knowledge and the credibility of universities. Useless research reduces the trust of industry and society in universities and weakens effective interactions between these institutions (Crespo & Dridi, 2007). As a result, the lack of attention to social and economic realities in defining research titles prevents the achievement of sustainable development and innovation goals (Eichler & Schwarz, 2019).

2. Literature review

Universities, as scientific institutions, need to play an active role in the development and progress of society. Through continuous interaction with industry and society, universities can help improve the quality of life of individuals while also developing their own scientific and research development. This approach will not only benefit universities, but will also contribute to the development of society and the economy of nations in general (Pedro et al, 2020).

Table 1: Literature review on making research titles more efficient

No.	Researcher (year)	Summary of results	Presented solutions
1	Crespo, M., & Dridi, H (2007)	This study examines the effects of unrelated research titles on the reputation of universities and emphasizes that these titles waste resources and reduce industry trust in universities.	Without providing a solution
2	Fairweather (1989)	The study shows that the lack of connection between academic research and industrial needs leads to a decrease in effective interactions and, as a result, the applicability of research is severely affected.	Without providing a solution

3	May & Perry (2022)	This paper emphasizes the importance of paying attention to social and economic realities in defining research titles and shows that not paying attention to these factors prevents the achievement of sustainable development and innovation goals.	Without providing a solution
4	Kobylarek (2018)	This study introduces the theory of "science in action" and emphasizes that research must be aligned with the real needs of society in order to contribute to sustainable development.	Without providing a solution
5	Adil et al (2014)	This study addresses the triple model of university, industry and government and emphasizes the importance of cooperation between these institutions to define applied research titles.	Strengthening cooperation between universities, industry and government
6	Boardman (2009)	This study examines the role of government policies in guiding academic research towards the needs of society and industry and shows that supportive policies can have a great impact on the glare of research titles.	Proposal for Supportive Policies
7	Koskela (2017)	This paper studies the effects of academic research on industrial innovations and concludes that irrelevant research can prevent the development and growth of the industry.	Without providing a solution
8	Fichtenberg et al (2019)	This study examines the social effects of science and research on society and emphasizes the need to relate research to social needs.	Without providing a solution
9	Toffel (2016)	This study examines applied and theoretical science and emphasizes the importance of defining research titles based on practical needs.	Without providing a solution

10	Sutliff (2000)	This study examines the challenges of defining applied titles between universities and industry and its impact on applied research.	Proposal of establishment of effective research communication channels
11	Feller (1990)	This paper emphasizes the effects of academic research on economic growth in case of paying attention to real market needs.	Without providing a solution
12	Vedel & Irwin (2017)	This study examines the relationship between academic research and industrial innovations and emphasizes the importance of aligning academic research with industrial needs.	Without providing a solution
13	Etzkowitz (2003)	This study examines the role of defining strong research titles in universities in developing innovation and its connection with industry and emphasizes the need for greater interaction.	Strengthening academic-industrial interactions
14	Morandi (2013)	This study examines the challenges in the formation of joint research titles in university-industry collaboration and suggests that new models of collaboration should be used.	Suggesting new models of collaboration
15	Votruba (1996)	This paper examines the degree of alignment of research conducted in universities for the benefit of industry, government, and society, and ultimately reports the low level of this alignment.	Without providing a solution
16	Mowery & Rosenberg (1979)	This study examines discrete and continuous innovations and emphasizes the importance of recognizing market needs in defining research titles.	Without providing a solution
17	Long (2003)	This paper addresses the effects of globalization on academic research and the need to pay attention to local needs, and emphasizes the importance of	Without providing a solution

		aligning research with the needs of the global community.	
18	Shugan (2003)	This study examines the challenges in defining research titles and the need to pay attention to the real needs of society, and emphasizes the importance of creating effective evaluation systems.	Proposal for creating effective evaluation systems
19	Rae (2010)	This study examines the role of universities in responding to contemporary social and economic challenges, and emphasizes the need to define research titles appropriate to these challenges.	Without providing a solution
20	Kappelle et al (1999)	This study examines the effects of climate change on academic research and the need to define research titles proportional to environmental needs.	Without providing a solution

As can be understood by examining the background of the research conducted, the principle of defining research titles in universities in accordance with the real needs of industry, government and society has long been of interest, and researchers have identified shortcomings in this area. However, no feasible solution has been presented in this case, and generalizations such as the need for greater communication between the university and industry, etc. have been considered as sufficient.

According to the aforementioned, the main goal of this study is to present a feasible solution to improve the efficiency of targeted academic research for greater communication with the field of practice in industries, government and society. In accordance with this goal, the main research question can be designed as follows: What is the practical solution to improve the efficiency of academic research in solving real problems?

3. Research Methodology

This study was designed using a mixed method that includes two main stages: participatory action research and grounded theory analysis, each of which will be discussed in detail below.

Stage One: Participatory Action Research

Participatory action research, as an interactive and participatory research method, allows researchers to actively engage with stakeholders and participants in the research process. At this stage, researchers, based on years of lived experience in various fields related to science and technology, will identify and analyze the challenges and opportunities in the relationship between universities, government, and industry, and through active participation with stakeholders, will design and implement measures to improve these relationships. The reasons for using the participatory action research methodology in this study include:

Researchers' lived experience: Researchers with a long history in related fields, including the presidency of Tehran School of Management, the chairmanship of the Higher Education Commission in the Parliament, the deputy of

science minister, and participation in the Supreme Council of the Cultural Revolution, have the necessary qualifications to provide specialized reform opinions in the field of promoting university-government-industry cooperation.

Direct interaction with stakeholders: This method allows researchers to directly communicate with stakeholders and activists in the field of science and technology and benefit from their experiences and opinions.

Second stage: Grounded theory

In this stage, the data from the participatory action research are analyzed using the grounded theory method. The purpose of this stage is to complete and refine the findings of the first stage and also to communicate the importance that those influential in science and technology should think about improving the quality of academic projects and targeted collaborations between universities, government and industry. The reasons for using grounded theory in this study are: Completing findings: Grounded theory allows researchers to receive new and complementary ideas from participants in the field of science and technology and to systematically analyze and interpret the data. Refining findings: This method helps researchers to examine and refine the findings from the participatory action research more carefully and to achieve a deeper understanding of the challenges and opportunities in the relationship between universities, government and industry. The research participants in the grounded theory phase are included in Table 2.

Table 2. Demographic introduction of interviewees

No.	Group	Number of interviewees	The reason for being selected
1	Associates with the University-Industry Liaison Office	5	These individuals, with 20-25 years of experience, have deep and transformative experiences in promoting university-government-industry collaborations, and have experienced successful and failed ideas in this area.
2	Associates in the government body	4	This group, with 15+ years of experience in government ministries, has a deep understanding of the challenges and real needs in university-industry collaborations, and seeks to improve the quality of projects and international collaborations.
3	Associates in industry-university liaison offices in the industry body	5	These individuals, with 10-15 years of experience in industry-university liaison offices, have valuable experiences in developing joint projects and identifying challenges and opportunities, and participate in this research as real representatives of industry.

4. Findings

A) Participatory Action Research: Introducing Real Problem Glare (RPG)

In the world of research, many great and effective innovations arise from deep and long-term concerns regarding real problems. Researchers who have been active at various levels of science and technology for four decades and have been observing the real needs of academia, industry, government and society understand well that one of the fundamental challenges in this field is "defining aimless academic research". In this regard, an idea called "Determination of Real Problem Glare (RPG)" is proposed, which can act as an effective solution and remedy for this challenge.

The title of this idea allegorically refers to the RPG (Rocket Propulsion Gun), which is used as a military tool to open paths and remove obstacles and ward off serious dangers before destruction occurs. Similarly, RPG14 can break down barriers to university-government-industry communication and chart new paths for these connections. The participatory action research cycles are mentioned in continue.

Table 3: Participatory action research cycles

action research cycles	Accidental field condition	Corrective solution	Improvement made	Increase in the amount of developed glare in titles
Cycle 1	Titles of research that are aimless and unrelated to the real needs of industry and society	Establishing a referral system for reviewing research titles by the university-industry liaison office	Improving the relationship between university and industry and increasing awareness of real needs	20 %
Cycle 2	Lack of transparency in the real needs of industry and society	Identifying and inviting industry experts to review proposed titles	Defining research titles more precisely and more relevant to real needs	35 %
Cycle 3	Lack of trust in the results of academic research	Using independent and transparent questionnaires to collect experts' opinions	Increasing the credibility and trust in academic research through independent evaluation	45 %
Cycle 4	Lack of specific criteria for evaluating research titles	Determining the "RPG" criterion for evaluating titles based on industry needs	Improving the quality of research titles and their compliance with real needs	65 %
Cycle 5	Lack of follow-up and use of research results	Following up and evaluating research results and expert suggestions	Improving research processes and increasing the applicability of results in industry and society	75 %
Cycle 6	Lack of diversity and representation in expert opinions	Determining 14 people from Industry, government, or community experts to complete a questionnaire	Balancing opinions and improving the accuracy of the research title evaluation	100 %

As is clear, with the occurrence of each cycle in which partial solutions are presented, the glare of the research titles is significantly increased in practice, so that with each improvement achieved, we ultimately achieve the full glare score of the research title (100%).

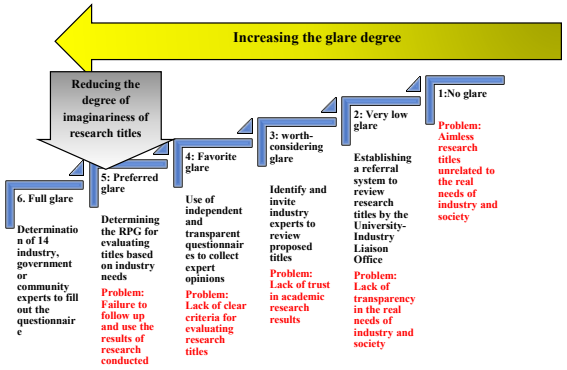


Figure 1. RPG 14 realization ratio and reduction in the degree of imaginariness of research titles

Explanations of cycle 6 and the number of 14 experts:

Justification for choosing 14 people:

This number is neither too small to cast doubt on the appropriateness of the research title, nor too large to make the student depressed and feel helpless.

Balance: 14 people allow the researcher to gather more diverse and comprehensive opinions from different fields (industry, government, and society), while this number is manageable and accessible.

Confidence: By having a specific group of experts, the student feels that he is receiving valid and reliable opinions, which can increase his motivation and self-confidence to continue the research.

The number 14 in this title means the glare inherent in this path and is adapted from authentic Islamic literature, especially the reference to the Fourteen Infallible Imams (peace be upon them). This number symbolizes perfection and guidance on the path of science and technology.

Introducing the RPG14 Idea Steps

Defining the main titles and the system of university-industry-government relations issues within the RPG14 framework includes the following steps:

1. Submitting the title: The applicant submits his proposed title to the relevant academic group.
2. Referring it to the University-Industry Relations Office: The academic group refers the title to the University-Industry Relations Office so that the said office can inquire from the Industry Relations Office with the target university.
3. Identifying experts: The Industry-university Relations Office provides the researcher with the names of 14 managers and experts related to the proposed title in the industry.
4. Introducing the title to experts: The researcher, who can be an independent researcher or a student, explains the title of his research, thesis or dissertation to 14 people introduced from the industry.
5. Completing the questionnaire: The experts independently complete the Likert scale from 1 to 5 and honestly express whether the title presented is close to the needs of the industry and can solve a problem in the industry. This stage requires honesty and trustworthiness of the experts in answering.
6. Research evaluation and introduction: If the average score of these 14 questionnaires is above 3, the Office of Industry Relations with the target university will introduce this research as applied research to the Office of University-Industry Relations. The closer the average score is to 5, the greater the glare of RPG will be.

Defining RPG14 with this structure can remove the existing barriers in the communication between universities and science user institutions and help improve the quality of academic research and effective cooperation between universities, government and industry. This idea not only helps clarify research goals, but also

leads to the development of sustainable and purposeful communications between various stakeholders.

B) Grounded Theory: Validation and Completion of the RPG14 Idea

Data were analyzed using the theoretical coding method. In the open coding stage, 145 primary codes and 22 central categories were extracted. In the central coding stage, the relationships between these concepts were examined and the integrable concepts were merged into each other and formed central categories. Finally, in the selective coding stage, the final and core category was formed. The codes and categories included in Table 4 show an overview of the causal, contextual, intervening, phenomenon, strategies, and consequences of the industry-university relationship. The core category resulting from the study is “Making effective the University Research Titles”. This category arises from multifaceted challenges and a turbulent relationship in the contemporary history of the country’s scientific economic policymaking. Subsequently, the data were structured based on the participants' statements and the researchers' perception and analysis within the framework of the dimensions of the paradigm model in the form of causal, contextual, and intervening conditions, strategies, and consequences.

Table 4. Validation of RPG 14 concepts by 14 experts

Role in the model	concepts	Initial codes
Causal conditions	Lack of coordination in defining the required titles	-Lack of effective communication of titles -Differences in the current goals and priorities of universities and the real needs of the country
	The need to define applied research	-Lack of attention to the real needs of the industry -Theoretical and non-practical research
	Lack of financial and human resources in projects is one of the factors for defining cheaper, featureless titles	-Financial constraints -Lack of specialized human resources
	Lack of a specific strategy in scientific policymaking	-Lack of long-term planning -Lack of coordination between institutions
Contextual conditions	Unstable organizational culture	-Lack of commitment of employees to purposeful interaction with academics -Resistance to changes within the industry
	Lack of trust between the university and the industry	-Past negative experiences of interacting with academics in projects -Lack of transparency in the information reflected between the university and national sectors
	Lack of appropriate infrastructure for cooperation	-Lack of technical facilities for Continuous and broader interactions between universities and national institutions -Lack of common platforms between

		universities and national institutions that have the ability to upload content and judge content, etc. online
	- Rapid changes in market needs	-Failure to predict long-term research needs by national institutions -Instability in demand and the possibility of changes in them due to political, international and economic instability
intervening conditions	-Existence of intermediary institutions between universities and industry	- Weak role of government institutions in determining the country's basic research directions and even little interaction with the private sector -Sense of enrichment of non-governmental organizations from interaction with universities, government and industry
	Government and financial support	-Government's obligation to forcibly allocate research budgets without real supervision -Financial facilities without supervision
	- Need for training and empowerment of individuals	-Lack of training programs to justify and promote industry-university liaison offices - Little sense of holding specialized workshops
	- Creation of cooperation networks	- Serious alternative of international cooperation instead of local cooperation National - Pseudoscientific networks resulting from unhealthy interactions and project sales
strategies	Development of joint research programs	-Definition of long-term and high-volume cooperation projects (macroprojects) - Definition of problem-solving case studies to test the university and verify its validity
	- Holding workshops and educational seminars	-Development of specialized training on how the university communicates with national institutions -Exchange of experiences in the form of joint seminars and by granting joint valid certificates
	- Creation of evaluation and monitoring systems	-Refinement of evaluation criteria for university-industry interactions - Continuous and two-way feedback between the

		university and industry
	- Strengthening international relations	-Participation of academics in conferences of large regional industries -Definition of international research titles
consequences	Increasing the efficiency of academic research	- Improving research results -Increasing the applicability of research
	- Improving the quality of joint projects	- Raising standards - More successes in projects
	- Promoting cooperation Between University, Government and Industry	-Effective Networking -Trust Building Between Stakeholders
	Creating New Innovations in Industry	- Developing New Technologies - New Products and Services

An overview of the findings of this part of the study is presented in Diagram 1.

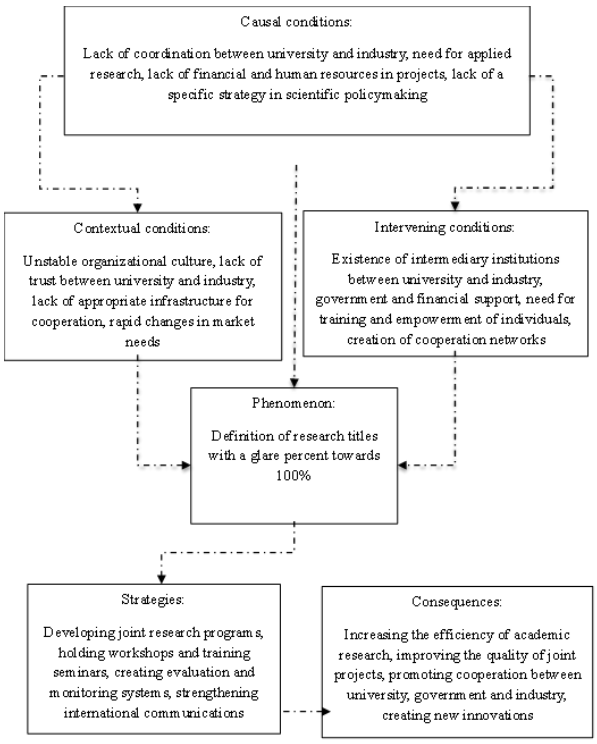


Diagram 1. Paradigmatic model of moving towards RPG14

Validity verification of the RPG14 idea by interviewees

According to the analyses conducted and the findings from the interviews with 14 experts, the idea of Real Problem Glare (RPG14) was generally verified. Considering the causal, contextual, intervening conditions, strategies, and consequences presented in the table, these experts considered this idea as an effective solution to overcome the challenges of connecting academic research with real issues and the field of industrial practice.

The experts believed that one of the main causes of the lack of effective communication between universities and industry is the lack of coordination and differences in the goals of these two institutions. They emphasized that RPG14 can reduce this lack of coordination by creating a clear and common framework. In addition, the need for applied research and attention to the real needs of the industry, as an important causal condition, has been considered in this idea.

In the contextual conditions, the experts pointed to unstable organizational culture and lack of trust between universities and industry. They emphasized that RPG14 can help strengthen the relationship between the two institutions by creating an atmosphere of trust and cooperation. In addition, the lack of appropriate infrastructure for cooperation and rapid changes in market needs are among the existing challenges that this idea seeks to address.

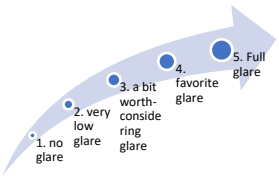
The existence of intermediary institutions and government and financial support as intervening conditions played an important role in confirming this idea. The experts believed that RPG14 could facilitate communication by using intermediary institutions and also provide the necessary resources for applied research by attracting financial support.

The strategies proposed in RPG14, including the development of joint research programs and holding workshops and training seminars, were recognized as solutions to improve communication between universities and industry. The experts emphasized that these strategies can help strengthen cooperation and improve the quality of research and create an effective network between stakeholders.

Finally, the positive implications of the RPG14 idea, including increased efficiency of academic research and improved quality of joint projects, were among the main reasons why experts endorsed the idea. They believed that by implementing the idea, new innovations could be created in the industry and collaborations between academia, government and industry could be enhanced.

5. Results and discussion

The Real Problem Glare (RPG14) idea is designed as an innovative and effective solution to achieve a high level of problem glare. The calculation of this criterion is as follows:

Worksheet for Determination of the Research Title Glare		
Dear Scholar;		
Regards. By choosing one of the 5 values from 1 to 5, determine the level of glare (being real/effective) and non-imaginariness of the research title		
	$\frac{\sum_{xi=1}^{14} Xi}{14} = RPG14$	RPG14 Less than 3: Below 50%: Rejected RPG14 Between 3 and 4: Above 50% to 70%: Needs negotiation and improvement RPG14 Above 4: Towards 100% glare: Acceptable
Step 1: Filling out 14 questionnaires	Step 2: Averaging	Step 3: Determining the level of glare

This idea shows its strength and efficiency especially in the following areas:

1. Creating synergy between university and industry

RPG14 aims to reduce the lack of coordination and differences in goals between university and industry, and seeks to create a common framework for research collaborations. This synergy can lead to increased quality of research and production of applied knowledge that directly responds to the needs of industry.

2. Strengthening trust and communication

Given the contextual conditions, RPG14 acts as a communication bridge that can strengthen trust between university and industry. Through the creation of intermediary institutions and holding workshops and educational seminars, this idea

seeks to break down walls of mistrust and create an atmosphere of cooperation and interaction.

3. Providing resources and financial support

RPG14 can compensate for the lack of financial and human resources, which is one of the main challenges in applied research, by identifying and attracting government and financial support. This action can help provide the necessary resources to implement joint projects and applied research.

4. Developing applied strategies

The strategies proposed in RPG14, including the development of joint research programs and the creation of collaborative networks, act as tools for improving communication and increasing the efficiency of research. These strategies should be creative and forward-looking approaches in industry and academia and create new titles for this type of effective communication.

5. Creating positive and sustainable outcomes

By implementing RPG14, it is possible to increase the efficiency of academic research and improve the quality of joint projects. These outcomes will not only benefit universities and industries, but can also contribute to the sustainable development and economic progress of the country. Finally, the core category of industry-university relations is applied agency in communication, dynamism and development. Considering agency for both university and industry sectors is the key to the action-oriented behavior of these two meta-organizations.

Suggestions based on the RPG14 idea for universities, industry and government

The idea of Real Problem Glare (RPG14) as an innovative model for improving communication and cooperation between universities, industry and government can lead to the formation of practical and effective solutions. Below are some suggestions for each of these institutions:

Suggestions for Universities

- Developing Applied Research Programs: Universities should focus on applied research that addresses real industry needs. These programs should be designed and implemented in direct collaboration with industries.
- Establishing Innovation Centers: Establishing innovation centers in universities can act as a bridge between students, researchers, and industries. These centers can help commercialize new ideas and technologies.
- Organizing joint workshops and seminars: Universities should organize joint workshops and seminars with industry representatives to effectively exchange experiences and knowledge.
- Developing specialized training courses: Creating training courses that respond to the specific needs of industries can help improve the skills of students and graduates and make them more ready to enter the job market.

Suggestions for Industry

- Supporting Academic Research Projects: Industries should actively support academic research projects, especially those that respond to their needs. This support can include funding, provision of equipment, and human resources.
- Establishing Advisory Committees: Establishing advisory committees consisting of university and industry representatives can help identify research and development needs and facilitate joint solutions.
- Developing internship programs: Industries should establish internship programs for university students so that they can gain practical experience and become familiar with real industry challenges.
- Participating in research projects: Industries can help develop new technologies and improve their products and services by participating in joint research projects with universities.

Recommendations for the government

- Establishing supportive policies: The government should establish supportive policies to encourage university-industry collaborations, including funding for joint projects and facilitating legal processes.
- Developing cooperation infrastructure: The government should provide the necessary infrastructure for inter-institutional collaborations, including creating online platforms for exchanging information and experiences.
- Supporting intermediary institutions: The government should provide financial and legal support to intermediary institutions that help facilitate communication between universities and industry.
- Encouraging innovation and research: Establishing incentive programs for researchers and industries that engage in innovation and applied research can contribute to economic growth and sustainable development.

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