

Reconstruction of Research Management in Indonesia

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Abstract

Research in Indonesia has lost focus or priority. The focus or priority in conducting this research is very important, especially with the limitations that it has. No wonder if the results of research that have been done so far have been largely useless and less desirable. So that policymakers also tend to search from the outside and that is certainly more in line with their needs. Thus, a reconstruction of research management in Indonesia is needed. The theories about synergy become the analytical framework of this research. This study uses qualitative research methods with descriptive approach. After doing the research, it was concluded that: In research activities in Indonesia there were 2 (two) major problems, namely: a small budget and few researchers. Both of these problems can be overcome by synergizing various parties, in this case: the Central Statistics Agency, the National Development Planning Agency, the Ministry of Higher Education Research and Technology, the K / L R & D Institutions and the regions, and the local government.

Keywords: Reconstruction, Management, Research, Synergy, Indonesia.

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1.0 INTRODUCTION

Research is very important in the development of life and civilization. Through research, new knowledge emerged, a series of new technologies continue to be developed. Various obstacles and problems faced by humanity are very possible to find answers through research.

However, to date research in Indonesia has lost focus or priority. The focus or priority in conducting this research is very important, especially with the limitations that it has. No wonder if the results of research that have been done so far have been largely useless and less desirable. So that policymakers also tend to search from the outside and that is certainly more in line with their needs.

Based on SCImago data, throughout 1996-2016, the number of global indexed publications in Indonesia reached 54,146 publications. When compared to Singapore, Thailand and Malaysia, Indonesia's ranking is still far below those of the three ASEAN countries. In 2016, at the world level, Indonesia was ranked 45th for the number of internationally published documents. In the Asian region, Indonesia's position is at number 11, while at the ASEAN level it ranks fourth (<http://www.scimagojr.com/journalrank.php>).

Furthermore, sourced from the United States Patent and Trademark Office, up to 2015, the total Indonesian patents registered with the US Patent Office total 333. This number is still very far compared to other ASEAN countries, such as Singapore (10,044 patents), Malaysia (2,690 patents), and Thailand (1,043 patents). Not only lagging, the growth of Indonesian patents also shows a stagnant trend since 2005 (<https://www.uspto.gov/>).

Countries with developed economies are highly committed to investing in research. They believe research plays a role in driving economic growth. This form of commitment is seen from the ratio of expenditure on

research and development to GDP - or Gross Expenditure on R & D (GERD). Countries with high commitment to research, based on 2013 data, are South Korea (4.1 percent), Japan (3.5 percent), and Finland (3.3 percent). At the ASEAN level, those with high GERD per GDP are Singapore (2.0 percent) and Malaysia (1.1 percent). Meanwhile, Indonesia's GERD per GDP has not reached 1 percent - only 0.085 percent - and far behind the global GERD (<https://tirto.id/kondisi-dunia-penelitian-di-indonesia-cvvj>).

Management is the process of planning, organizing, coordinating, and controlling resources to achieve goals effectively and efficiently. Effective means that goals can be achieved in accordance with planning, while efficient means the tasks carried out correctly, organized and in accordance with a predetermined time (Priyono, 20017). Management science is very important in research center management. With the application of appropriate management science, it is expected that this research center is required not only to manage national scale activities but to an international scale. In this context, the research institute is unique in its management. As a research institution, it is demanded to innovate and the steps to develop scientific concepts become reality in the field with a sustainable system.

In managing a research institution it is not easy, it requires strong human resources. In carrying out activities in this institution, HR as the main supporter is expected to have adequate competence.

In its activities research institutions must understand the dynamics of the environment that often change. Government research policies, research topic trends, availability of funding sources from central and local governments, foreign donor agencies, multilateral agencies, to philanthropy need to be considered. Without a clear understanding of the external state of research institutions, there will be difficulties in development.

Thus, a reconstruction of research management in Indonesia is needed.

■ 2.0 PROBLEM

Based on the description, as a limitation in this paper, 2 (two) problems are proposed, namely:

- (a). What the current model of research management in Indonesia, and
- (b). How the proposed model is applied as reconstruction of research management in Indonesia?

■ 3.0 ANALYTICAL FRAMEWORK

In Research, synergy between related institutions is needed. Najiyati and Rahmat (2011), define synergy as a combination or combination of elements or parts that can produce better and greater output. In management, the concept of synergy was adapted by experts such as Ansoff (1968) in the scope of business policy and defined as an effect that can produce a result obtained from a combination of various organizational resources, whose value is greater than the total value of each part.

Hampden-Turner (1990) states that synergy activity is a process that involves various activities, which go together so as to create something new. Synergy is the result of a dialogical relationship between different knowledge, and is a process that accumulates new knowledge.

According to Stephen R. Covey (2004), synergy is to complement and complement differences to achieve results greater than the number of parts per section. Synergy is a collaboration that can be realized when we can synchronize various alternative desires by means of good communication between team members.

Based on several definitions that explain synergies, the conclusion is that synergy is an activity or condition of cooperation in which between one party and the other parties support and coordinate to succeed in a policy so that an efficient activity is realized. Synergy is a situation where there is unification or cohesiveness of behavior, the existence of joint activities or collaboration / interaction between one element / element with other elements / elements in producing effects that are greater than individual.

■ 4.0 METHODOLOGY

This study uses qualitative research methods with descriptive approach. According to Moleong (2012), defines, "qualitative research methodology as a research procedure that produces descriptive data in the form of written or verbal words from people and observable behavior".

The focus in this study is the 2017-2045 National Research Master Plan.

Data collection techniques using document studies, interviews and observations.

Data analysis includes collected data or information presented in the form of a description and at the same time giving meaning or interpretation so that the information has scientific or theoretical significance.

■ 5.0 RESULTS AND DISCUSSION

A. Existing Model of Research Management in Indonesia

Currently the National Research Master Plan (RIRN) has been formulated as a reference document for research and development. The RIRN was prepared by the Ministry of Technology and Higher Education as a technical work map guide for all national stakeholders in the planning to evaluation stages. National Research Master Plan (RIRN) 2017-2045. This research roadmap contains plans and projections for a long-term research program, so that Indonesia has clear and measurable research directions and targets.

This RIRN construction will certainly not be separated from the above regulations, namely the Draft Law on Science and Technology SINAS which until now has not been ratified. However, Muhammad Dimiyati, the Directorate General of Research and Development Strengthening once mentioned national research issues that were the main constraints in Indonesia, namely: Human Resources, Research Management, Institutional Research, and Research Budget.

The number of Indonesian Research Human Resources 1,071 people per million populations has been calculated with the lecturers who did and did not conduct research, according to LIPI data of less than 500. In addition, the productivity of our researchers is very low. In the context of research management that research activities are still equated with administrative activities and on the institutional side the absence of institutions in addition to the low synergy of R & D Institutions with Industry and low research infrastructure support.

Regarding the budget, if compared with countries in the world, Indonesia in the context of the research budget / Gross Expenditures of Research and Development (GERD), Indonesia is still the lowest of 0.25 per GDP, still inferior to Mexico, Bangladesh and Saudi Arabia. Even though we realize that there is a positive correlation between the allocation of the research budget and the progress of a nation.

To answer this problem, a policy has been issued to promote science and technology, one of which is RIRN. RIRN is structured to place science and technology so that it has a significant (and measurable) contribution to national economic development. To measure how much the contribution of science and technology is used indicators of the productivity of science and technology human resources (researchers). The productivity correlates with science and technology human resource input and budget, both in quantity and quality. When productivity increases, the amount of intellectual property also increases. Increased intellectual property is positively correlated with the use of intellectual property in the industry.

RIRN regulates the focus of research, but the research agenda and budgeting in government institutions has not been coordinated. Research must be integrated, coordination issues between ministries / institutions, research agendas in various K / Ls not integrated and not focused. In addition, budgeting for research funds spread across various institutions makes research not optimal. RIRN only mandates that all research institutions in K / L that have been running individually, without synergy, must be coordinated.

In the Beleid, eight research fields were also established to become a national research agenda. Its fields include food, energy, health, transportation, engineering engineering products, defense and security, maritime, and social humanities.

Director of Science and Technology Research and Development at the Ministry of Research, Technology and Higher Education, Ira Nurhayati Djarot added, Indonesian research was like experiencing multiple problems. First, research funds are relatively small when compared with other countries, namely 0.25% of GDP or around Rp. 25 trillion. Second, the small budget is scattered in various institutions without coordination and synergy so the results are minimal. In the end, the RIRN Document is expected to be a common reference in supporting the growth of the nation's competitiveness and creating a conducive research climate for all stakeholders.

Things that become obstacles in RIRN must be corrected immediately.

B. Alternative Model Management Research in Indonesia

More than a hundred years ago, Thomas Alva Edison repeatedly failed to carry out an experiment, which in the end was able to find an electric lamp, an invention that until now we enjoy. He conducted experiments, then referred to as research, many times it was not only to satisfy the lust of his knowledge, but more to meet the needs of the lives of many people. In fact, research is carried out to meet the needs of a large number of people over a very long period of time, this is indicated by the absorption from the industry for mass production of research results from researchers.

Current data shows that the absorption of the industry against domestic research results is still low and not optimal. This happens because the industrial world and researchers have not built good communication so that the results of the research and industry needs as if they are running; many of the research results of the nation's children are still accumulating in the library (<http://www.pikiran-rakyat.com/pendidikan/2017/03/09/hasil-riset-kurang-diserap-industri-395719>).

The question of pursuing "after the journals, moreover?" is interesting to discuss. Because researchers' originations that are limited to finding credit numbers (points) without thinking about the usefulness (coins) of research results must be shifted to fulfill the needs of many people. So that points and coins can be obtained at the same time by researchers.

Researchers in conducting research must be based on market demand (fulfillment of industry needs), not only in fulfilling the scientific lust of the researcher. Intense communication and synergy need to be developed as soon as possible between the industrial world and researchers to be able to apply the principle of mass production. The government needs to play the role of mediator to establish intense communication and synergy between researchers and industry. The principles of mass production certainly pay attention to the broad impact that is sustainable and effective and efficient. Research results must have a broad impact on the community on an ongoing basis (such as the discovery of electric lights), successful and efficient. Successful if the prototype meets national and international standards, effective because the research results can be easily reached by the community.

For example, the invention of ESEMKA electric cars has almost fulfilled the principle of mass production, with prices marketed very affordable by the people (around 180 million rupiahs), but not meeting the standards by not passing the emissions test. Not fulfilling this standard does not make us then lose blood by leaving it alone, but we must continue to make improvements. There is no developed nation in the world without the support of industrial-based research results. Developed countries continue to accelerate with the results of industry-based research that meets market demands that are increasingly complete. Thus, it can be said that the results of research can increase the desires and needs of industries that never know the word satisfied. The market is not satisfied just driving motorbikes on land, they are competent and may also need to drive motorbikes in the blue sky, for that research must fulfill it, and so on.

The low research funding, should not be used as an excuse not to innovate, researchers must be able to work around it. One way to get around the limited funds is to conduct research collectively, simultaneously and relatively briefly, involving various disciplines. The key word is to realize the synergy and eliminate the sectoral ego of the researchers, so that the results of research can be more perfect and attractive to be absorbed by the industrial world in order to meet market needs.

Market Cycle --- Research ---- Industry --- Market, needs serious attention from researchers. The results of the research must originate from market demand and end in the market, so that the results of research not only get applause and end up in the library or end up in the drawer of the research desk. Research results must exist and have a large, real and significant impact in the midst of society.

According to the Minister of Research and Technology, in the 2017-2045 RIRN there is a problem of research funding which is currently only 0.2% (<http://technology-indonesia.com/lain-lain/umum-lain-lain/rirn-2017-2045-dorong-pembangunan-ekonomi-berbasis-riset/>).

The second problem is the number of researchers who are very few and scattered in various research institutions.

To overcome these two problems, an alternative model is proposed as follows (fig. 1.0):

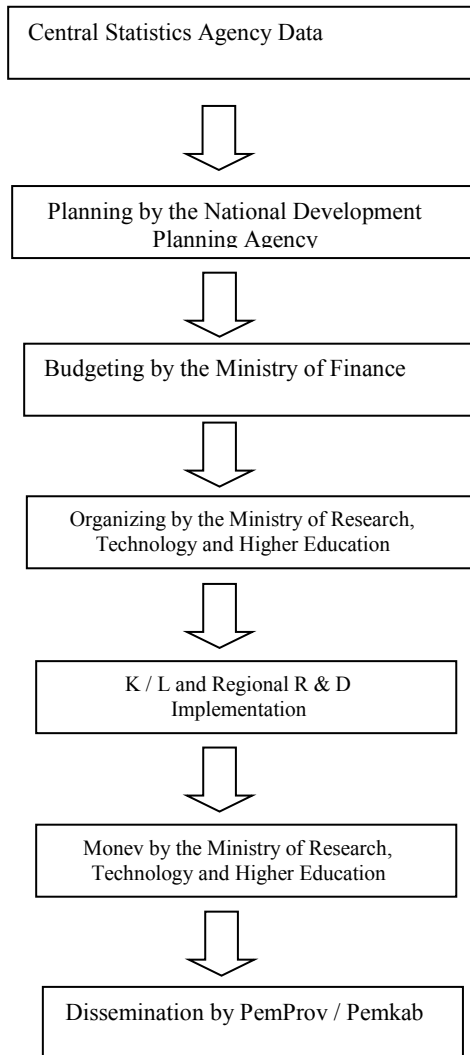


Fig.1.0: New Management Model of Research

All research must start from the needs of the community and end in the community. This means that the results of the research must be used by the community to fulfill their needs. Data regarding the needs of the community certainly exist in the Central Statistics Agency (BPS). BPS is in accordance with its main duties and functions to carry out basic research on community needs.

The data provided by BPS is then processed by the National Planning Agency (BAPPENAS) into a planning document to meet the needs of the community. The planning document must directly refer to the prototype instead of just priority parts. For example, based on BPS data, the public needs cheap, comfortable and environmentally friendly transportation, BAPPENAS issued a planning document in the form of an electric car.

Furthermore, the Ministry of Finance conducted a budgeting based on planning documents by BAPPENAS. Of course, the Ministry of Finance carries out priority scales with other Ministries / Institutions.

After budgeting by the Ministry of Finance, the entire research budget will be managed by the Ministry of Research and Technology. KEMENRISTEKDIKTI organizes research to focus research activities.

R&D institutions in the Ministry of Finance / Institutions and regions carry out research by producing prototypes that can be used by the community with the principle of cheap, easy and convenient.

During the end of the research activities, KEMENRISTEKDIKTI conducts monitoring and evaluations to ensure research activities are running properly.

After the research produced a prototype, then it became the task of the local government to disseminate the results of research to the public. Dissemination that can be carried out by regional governments includes: (1) technology and information demonstration, (2) face-to-face communication, (3) information development, and (4) providing knowledge and technology services.

■ 6.0 CONCLUSION

In research activities in Indonesia there were 2 (two) major problems, namely: a small budget and few researchers. Both of these problems can be overcome by synergizing various parties, in this case: the Central Statistics Agency, the National Development Planning Agency, the Ministry of Higher Education Research and Technology, the K / L R & D Institutions and the regions, and the local government.

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